Spring 2015

Educational Learning Theories

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December, 2014

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CHAPTER 1

Behaviorism

B. F. Skinner: Response Approach Toward Learning

INTRODUCTION

B. F. Skinner (Burrhus Frederic Skinner, 1904–1990) was an American psychologist, born in Susquehanna, PA., and educated at Harvard University. He received his Ph.D. from Harvard in 1931 and joined the faculty there in 1948. Skinner became the principal advocate in the U.S. of the behaviorist school of psychology, in which human behavior is explained in terms of physiological responses to external stimuli. He believed that that seemingly spontaneous action is regulated through rewards and punishment. Skinner believed that people don't shape the world, but instead, the world shapes them. Skinner also believed that human behavior is predictable, just like a chemical reaction. Skinner firmly believed that human behavior could be engineered to make the world a better place. He is also well known for his "Skinner box," a tool to demonstrate his theory that rewarded behavior is repeated. Among Skinner's important works are *Behavior of Organisms* (1938), *Walden Two* (1961), *The Technology of Teaching* (1968), *Beyond Freedom and Dignity* (1971), *Particulars of My Life* (1976) and *Reflections on Behaviorism and Society* (1978). Skinner died of leukemia in 1990.

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Source: Standridge, M. (2002). Behaviorism. In M. Orey (Ed.), *Emerging perspectives on learning, teaching, and technology*. Retrieve from http://epltt.coe.uga.edu/

Behaviorism

What is Behaviorism?

Behaviorism is primarily concerned with observable and measurable aspects of human behavior. In defining behavior, behaviorist learning theories emphasize changes in behavior that result from stimulus-response associations made by the learner. Behavior is directed by stimuli. An individual selects one response instead of another because of prior conditioning and psychological drives existing at the moment of the action (Parkay & Hass, 2000).

Behaviorists assert that the only behaviors worthy of study are those that can be directly observed; thus, it is actions, rather than thoughts or emotions, which are the legitimate object of study. Behaviorist theory does not explain abnormal behavior in terms of the brain or its inner workings. Rather, it posits that all behavior is learned habits, and attempts to account for how these habits are formed.

In assuming that human behavior is learned, behaviorists also hold that all behaviors can also be unlearned, and replaced by new behaviors; that is, when a behavior becomes unacceptable, it can be replaced by an acceptable one. A key element to this theory of learning is the rewarded response. The desired response must be rewarded in order for learning to take place (Parkay & Hass, 2000).

In education, advocates of behaviorism have effectively adopted this system of rewards and punishments in their classrooms by rewarding desired behaviors and punishing inappropriate ones. Rewards vary, but must be important to the learner in some way. For example, if a teacher wishes to teach the behavior of remaining seated during the class period, the successful student's reward might be checking the teacher's mailbox, running an errand, or being allowed to go to the library to do homework at the end of the class period. As with all teaching methods, success depends on each student's stimulus and response, and on associations made by each learner.

Behaviorism Advocates

John B. Watson (1878-1958) and B. F. Skinner (1904-1990) are the two principal originators of behaviorist approaches to learning. Watson believed that human behavior resulted from specific stimuli that elicited certain responses. Watson's basic premise was that conclusions about human development should be based on observation of overt behavior rather than speculation about subconscious motives or latent cognitive processes (Shaffer, 2000). Watson's view of learning was based in part on the studies of Ivan Pavlov (1849-1936). Pavlov was studying the digestive process and the interaction of salivation and stomach function when he realized that reflexes in the autonomic nervous system closely linked these phenomena. To determine whether external stimuli had an affect on this process, Pavlov rang a bell when he gave food to the experimental dogs. He noticed that the dogs salivated shortly before they were given food. He discovered that when the bell was rung at repeated feedings, the sound of the bell alone (a conditioned stimulus) would cause the dogs to salivate (a conditioned response). Pavlov also found that the conditioned reflex was repressed if the stimulus proved "wrong" too frequently; if the bell rang and no food appeared, the dog eventually ceased to salivate at the sound of the bell.

Classical Conditioning

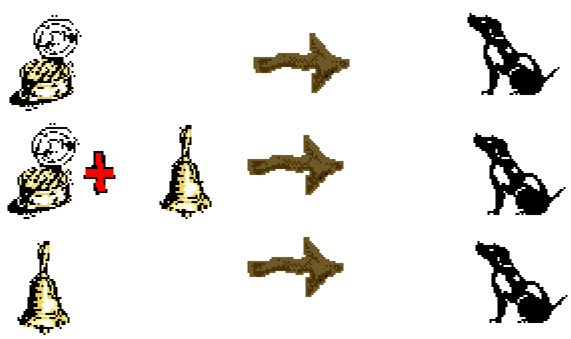


Figure 1. *This illustration shows the steps of classical conditioning.*

1. Food= salivation

2. Food + Stimulus = salivation (conditioned stimulus)

3. Bell alone produces salivation (conditioned response)

Expanding on Watson's basic stimulus-response model, Skinner developed a more comprehensive view of conditioning, known as operant conditioning. His model was based on the premise that satisfying responses are conditioned, while unsatisfying ones are not. Operant conditioning is the rewarding of part of a desired behavior or a random act that approaches it. Skinner remarked that "the things we call

pleasant have an energizing or strengthening effect on our behavior" (Skinner, 1972, p. 74). Through Skinner's research on animals, he concluded that both animals and humans would repeat acts that led to favorable outcomes, and suppress those that produced unfavorable results (Shaffer, 2000). If a rat presses a bar and receives a food pellet, he will be likely to press it again. Skinner defined the bar-pressing response as operant, and the food pellet as a reinforcer. Punishers, on the other hand, are consequences that suppress a response and decrease the likelihood that it will occur in the future. If the rat had been shocked every time, it pressed the bar that behavior would cease. Skinner believed the habits that each of us develops result from our unique operant learning experiences (Shaffer, 2000).

Operant Conditioning

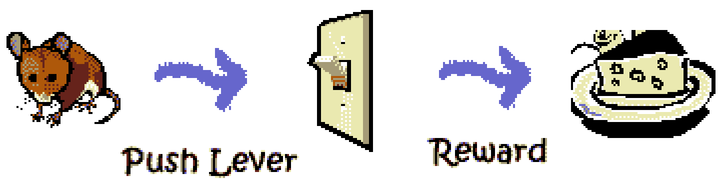


Figure 2. *This illustration illustrates operant conditioning. The mouse pushes the lever and receives a food reward. Therefore, he will push the lever repeatedly in order to get the treat.*

Educational Implications

Behaviorist techniques have long been employed in education to promote behavior that is desirable and discourage that which is not. Among the methods derived from behaviorist theory for practical classroom application are contracts, consequences, reinforcement, extinction, and behavior modification.

Contracts, Consequences, Reinforcement, and Extinction

Simple contracts can be effective in helping children focus on behavior change. The relevant behavior should be identified, and the child and counselor should decide the terms of the contract. Behavioral contracts can be used in school as well as at home. It is helpful if teachers and parents work together with the student to ensure that the contract is being fulfilled. Two examples of behavior contracts are listed below:

- A student is not completing homework assignments. The teacher and the student design a contract providing that the student will stay for extra help, ask parents for help, and complete assigned work on time. The teacher will be available after school, and during free periods for additional assistance.
- A student is misbehaving in class. The teacher and student devise a behavioral contract to minimize distractions. Provisions include that the student will be punctual, will sit in front of the teacher, will raise hand with questions/comments, and will not leave his seat without permission.

Consequences occur immediately after a behavior. Consequences may be positive or negative, expected or unexpected, immediate or long-term, extrinsic or intrinsic, material or symbolic (a failing grade), emotional/interpersonal or even unconscious. Consequences occur after the "target" behavior occurs, when either positive or negative reinforcement may be given. Positive reinforcement is presentation of a stimulus that increases the probability of a response. This type of reinforcement occurs frequently in the classroom. Teachers may provide positive reinforcement by:

- Smiling at students after a correct response.
- Commending students for their work.
- Selecting them for a special project.
- Praising students' ability to parents.

Negative reinforcement increases the probability of a response that removes or prevents an adverse condition. Many classroom teachers mistakenly believe that negative reinforcement is punishment administered to suppress behavior; however, negative reinforcement increases the likelihood of a behavior, as does positive reinforcement. Negative implies removing a consequence that a student finds unpleasant. Negative reinforcement might include:

- Obtaining a score of 80% or higher makes the final exam optional.
- Submitting all assignments on time results in the lowest grade being dropped.
- Perfect attendance is rewarded with a "homework pass."

Punishment involves presenting a strong stimulus that decreases the frequency of a particular response. Punishment is effective in quickly eliminating undesirable behaviors. Examples of punishment include:

- Students who fight are immediately referred to the principal.
- Late assignments are given a grade of "0".
- Three tardies to class results in a call to the parents.
- Failure to do homework results in after-school detention (privilege of going home is removed).

Table1. *Reinforcement and punishment comparison*

	REINFORCEMENT (Behavior Increases)	PUNISHMENT (Behavior Decreases)
POSITIVE (Something is added)	Positive Reinforcement Something is added to increase desired behavior Ex: Smile and compliment student on good performance	Positive Punishment Something is added to decrease undesired behavior Ex: Give student detention for failing to follow the class rules
NEGATIVE (Something is removed)	Negative Reinforcement Something is removed to increase desired behavior Ex: Give a free homework pass for turning in all assignments	Negative Punishment Something is removed to decrease undesired behavior Ex: Make student miss their time in recess for not following the class rules

Extinction decreases the probability of a response by contingent withdrawal of a previously reinforced stimulus. Examples of extinction are:

- A student has developed the habit of saying the punctuation marks when reading aloud. Classmates reinforce the behavior by laughing when he does so. The teacher tells the students not to laugh, thus extinguishing the behavior.
- A teacher gives partial credit for late assignments; other teachers think this is unfair; the teacher decides to then give zeros for the late work.
- Students are frequently late for class, and the teacher does not require a late pass, contrary to school policy. The rule is subsequently enforced, and the students arrive on time.

Modeling, Shaping, and Cueing

Modeling is also known as observational learning. Albert Bandura has suggested that modeling is the basis for a variety of child behavior. Children acquire many favorable and unfavorable responses by observing those around them. A child who kicks another child after seeing this on the playground, or a student who is always late for class because his friends are late is displaying the results of observational learning.

"Of the many cues that influence behavior, at any point in time,
none is more common than the actions of others" (Bandura, 1986, p.45)



Figure 3. *In this picture, the child is modeling the behavior of the adult. Children watch and imitate the adults around them; the result may be favorable or unfavorable behavior!*

Shaping is the process of gradually changing the quality of a response. The desired behavior is broken down into discrete, concrete units, or positive movements, each of which is reinforced as it progresses towards the overall behavioral goal. In the following scenario, the classroom teacher employs shaping to change student behavior: the class enters the room and sits down, but continue to talk after the bell rings. The teacher gives the class one point for improvement, in that all students are seated. Subsequently, the students must be seated and quiet to earn points, which may be accumulated and redeemed for rewards.

Cueing may be as simple as providing a child with a verbal or non-verbal cue as to the appropriateness of a behavior. For example, to teach a child to remember to perform an action at a specific time, the teacher might arrange for him to receive a cue immediately before the action is expected rather than after it has been performed incorrectly. For example, if the teacher is working with a student that

habitually answers aloud instead of raising his hand, the teacher should discuss a cue such as hand-raising at the end of a question posed to the class.

Behavior Modification

Behavior modification is a method of eliciting better classroom performance from reluctant students. It has six basic components:

1. Specification of the desired outcome (What must be changed and how it will be evaluated?) One example of a desired outcome is increased student participation in class discussions.
2. Development of a positive, nurturing environment (by removing negative stimuli from the learning environment). In the above example, this would involve a student-teacher conference with a review of the relevant material, and calling on the student when it is evident that she knows the answer to the question posed.
3. Identification and use of appropriate reinforcers (intrinsic and extrinsic rewards). A student receives an intrinsic reinforcer by correctly answering in the presence of peers, thus increasing self-esteem and confidence.
4. Reinforcement of behavior patterns develop until the student has established a pattern of success in engaging in class discussions.
5. Reduction in the frequency of rewards--a gradual decrease the amount of one-on-one review with the student before class discussion.
6. Evaluation and assessment of the effectiveness of the approach based on teacher expectations and student results. Compare the frequency of student responses in class discussions to the amount of support provided, and determine whether the student is independently engaging in class discussions (Brewer, Campbell, & Petty, 2000).

Further suggestions for modifying behavior can be found at the mentalhealth.net web site. These include changing the environment, using models for learning new behavior, recording behavior, substituting new behavior to break bad habits, developing positive expectations, and increasing intrinsic satisfaction. This informative website's URL is http://mentalhelp.net/psyhelp/chap11/.

Classroom Importance

Using behaviorist theory in the classroom can be rewarding for both students and teachers. Behavioral change occurs for a reason; students work for things that bring them positive feelings, and for approval from people they admire. They change behaviors to satisfy the desires they have learned to value. They generally avoid behaviors they associate with unpleasantness and develop habitual behaviors from those that are repeated often (Parkay & Hass, 2000). The entire rationale of behavior modification is that most behavior is learned. If behaviors can be learned, then they can also be unlearned or relearned.

In my own teaching, I have found that a behavior that goes unrewarded will be extinguished. Consistently ignoring an undesirable behavior will go far toward eliminating it. When the teacher does not respond angrily, the problem is forced back to its source-the student. Other classroom strategies I have found successful are contracts, consequences, punishment and others that have been described in detail earlier. Behaviorist learning theory is not only important in achieving desired behavior in mainstream education; special education teachers have classroom behavior modification plans to implement for their students. These plans assure success for these students in and out of school.

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CHAPTER 2

Cognitive Learning

Jean Piaget: Stages of Cognitive Development

INTRODUCTION

Jean Piaget (1896–1980), a Swiss psychologist, is best known for his pioneering work on the development of intelligence in children. His studies have had a major impact on the fields of psychology and education. Piaget was born August 9, 1896, in Neuchâtel. He was educated at the University of Neuchâtel and received his doctorate in biology at age 22. Piaget became interested in psychology and he studied and carried out research first in Zürich, Switzerland, and then at the Sorbonne in Paris, where he began his studies on the development of cognitive abilities. He taught at various European universities while he continued his research and writing. In 1955 he became director of the International Center for Epistemology at the University of Geneva, and later he was co-director of the International Bureau of Education. He died in Geneva, on September 17, 1980.

In his work Piaget identified the child's four stages of mental growth. In the sensorimotor stage, occurring from birth to age 2, the child is concerned with gaining motor control and learning about physical objects. In the preoperational stage, from ages 2 to 7, the child is preoccupied with verbal skills. At this point the child can name objects and reason intuitively. In the concrete operational stage, from ages 7 to 12, the child begins to deal with abstract concepts such as numbers and relationships. Finally, in the formal operational stage, ages 12 to 15, the child begins to reason logically and systematically. Among Piaget's many books are *The Language and Thought of the Child* (1926), *Judgment and Reasoning in the Child* (1928), *The Origin of Intelligence in Children* (1954), *The Early Growth of Logic in the Child* (1964), and *Science of Education and the Psychology of the Child* (1970).

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Piaget's Stages of Cognitive Development

Introduction

From his observation of children, Piaget understood that children were creating ideas. They were not limited to receiving knowledge from parents or teachers; they actively constructed their own knowledge. Piaget's work provides the foundation on which constructionist theories are based. Constructionists believe that knowledge is constructed and learning occurs when children create products or artifacts. They assert that learners are more likely to be engaged in learning when these artifacts are personally relevant and meaningful.

In studying the cognitive development of children and adolescents, Piaget identified four major stages: sensorimotor, preoperational, concrete operational and formal operational. Piaget believed all children

pass through these phases to advance to the next level of cognitive development. In each stage, children demonstrate new intellectual abilities and increasingly complex understanding of the world. Stages cannot be "skipped"; intellectual development always follows this sequence. The ages at which children progress through the stages are averages-they vary with the environment and background of individual children. At any given time a child may exhibit behaviors characteristic of more than one stage.

Stages of Cognitive Development

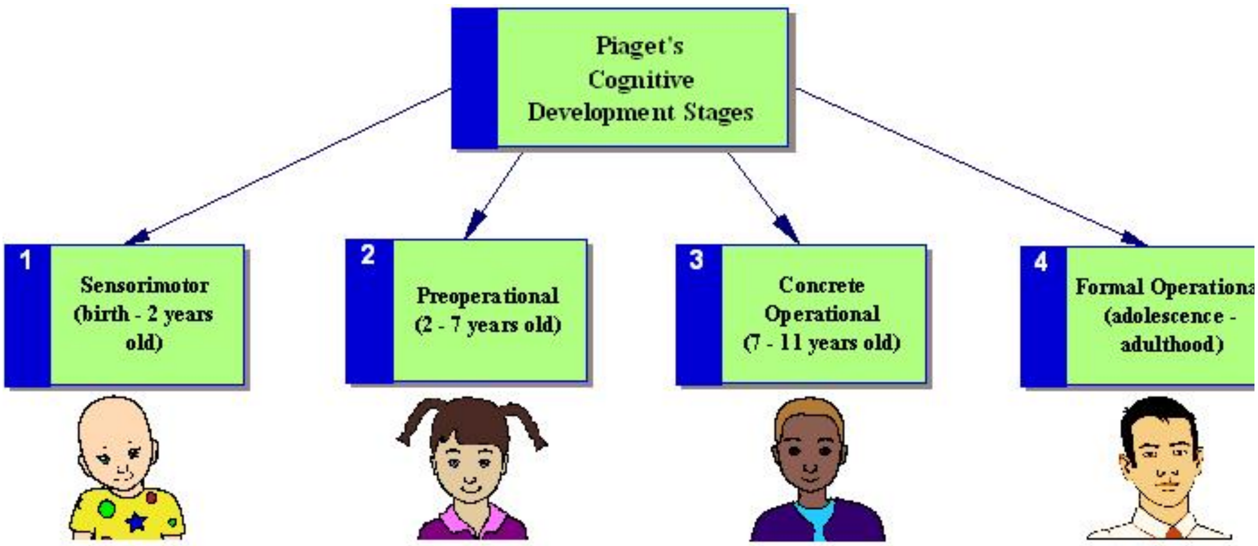


Figure 1. *The Inspiration web above illustrates Piaget's four cognitive development stages; sensorimotor (birth-2 years), preoperational (2 - 7 years), concrete operational (7 - 11 years), and formal operational (adolescence - adulthood). By Tiffany Davis, Meghann Hummel, and Kay Sauers (2006)*

The first stage, sensorimotor, begins at birth and lasts until 18 months-2 years of age. This stage involves the use of motor activity without the use of symbols. Knowledge is limited in this stage, because it is based on physical interactions and experiences. Infants cannot predict reaction, and therefore must constantly experiment and learn through trial and error. Such exploration might include shaking a rattle or putting objects in the mouth. As they become more mobile, infants' ability to develop cognitively increases. Early language development begins during this stage. Object permanence occurs at 7-9 months, demonstrating that memory is developing. Infants realize that an object exists after it can no longer be seen.

The preoperational stage usually occurs during the period between toddlerhood (18-24months) and early childhood (7 years). During this stage children begin to use language; memory and imagination also develop. In the preoperational stage, children engage in make believe and can understand and express relationships between the past and the future. More complex concepts, such as cause and effect relationships, have not been learned. Intelligence is egocentric and intuitive, not logical.

The concrete operational stage typically develops between the ages of 7-11 years. Intellectual development in this stage is demonstrated through the use of logical and systematic manipulation of symbols, which are related to concrete objects. Thinking becomes less egocentric with increased awareness of external events, and involves concrete references.

The period from adolescence through adulthood is the formal operational stage. Adolescents and adults use symbols related to abstract concepts. Adolescents can think about multiple variables in systematic ways, can formulate hypotheses, and think about abstract relationships and concepts.

Piaget believed that intellectual development was a lifelong process, but that when formal operational thought was attained, no new structures were needed. Intellectual development in adults involves developing more complex schema through the addition of knowledge.

Educational Implications

An important implication of Piaget's theory is adaptation of instruction to the learner's developmental level. The content of instruction needs to be consistent with the developmental level of the learner. The teacher's role is to facilitate learning by providing a variety of experiences. "Discovery learning" provides opportunities for learners to explore and experiment, thereby encouraging new understandings. Opportunities that allow students of differing cognitive levels to work together often encourage less mature students to advance to a more mature understanding. One further implication for instruction is the use of concrete "hands on" experiences to help children learn. Additional suggestions include:

- Provide concrete props and visual aids, such as models and/or time line
- Use familiar examples to facilitate learning more complex ideas, such as story problems in math.
- Allow opportunities to classify and group information with increasing complexity; use outlines and hierarchies to facilitate assimilating new information with previous knowledge.
- Present problems that require logical analytic thinking; the use of tools such as "brain teasers" is encouraged.

Huitt and Hummel (1998) assert that "only 35% of high school graduates in industrialized countries obtain formal operations; many people do not think formally during adulthood". This is significant in terms of developing instruction and performance support tools for students who are chronologically adults, but may be limited in their understanding of abstract concepts. For both adolescent and adult learners, it is important to use these instructional strategies:

- Use visual aids and models.
- Provide opportunities to discuss social, political, and cultural issues.
- Teach broad concepts rather than facts, and to situate these in a context meaningful and relevant to the learner.

Criticisms of Piaget's Theory

Researchers during the 1960's and 1970's identified shortcomings in Piaget's theory. First, critics argue that by describing tasks with confusing abstract terms and using overly difficult tasks, Piaget under estimated children's abilities. Researchers have found that young children can succeed on simpler forms of tasks requiring the same skills. Second, Piaget's theory predicts that thinking within a particular stage would be similar across tasks. In other words, preschool children should perform at the preoperational level in all cognitive tasks. Research has shown diversity in children's thinking across cognitive tasks. Third, according to Piaget, efforts to teach children developmentally advanced concepts would be unsuccessful. Researchers have found that in some instances, children often learn more advanced concepts with relatively brief instruction. Researchers now believe that children may be more competent than Piaget originally thought, especially in their practical knowledge.

When the parent reads to the child about dogs, the child constructs a schema about dogs. Later, the child sees a dog in the park; through the process of assimilation the child expands his/her understanding of what a dog is. When the dog barks, the child experiences disequilibria because the child's schema did not include barking. Then the child discovers the dog is furry, and it licks the child's hand. Again, the child experiences disequilibria. By adding the newly discovered information to the existing schema the child is actively constructing meaning. At this point the child seeks reinforcement from the parent. The parent affirms and reinforces the new information. Through assimilation of the new information the child returns to a state of equilibrium.

The process of accommodation occurs when the child sees a cat in the park. A new schema must be formed, because the cat has many traits of the dog, but because the cat meows and then climbs a tree the child begins to actively construct new meaning. Again the parent reinforces that this is a cat to resolve the child's disequilibria. A new schema about cats is then formed and the child returns to a state of equilibrium.

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CHAPTER 3

A. Bandura: Social Cognitive Theory

INTRODUCTION

Albert Bandura (1925-) was born in Mundare, Alberta in 1925. He was the youngest of six children. Both of his parents were immigrants from Eastern Europe. Bandura's father worked as a track layer for the Trans-Canada railroad while his mother worked in a general store before they were able to buy some land and become farmers. Though times were often hard growing up, Bandura's parents placed great emphasis on celebrating life and more importantly family. They were also very keen on their children doing well in school. Mundare had only one school at the time so Bandura did all of his schooling in one place.

After spending a summer working in Alaska after finishing high school, Bandura went to the University of British Columbia. He graduated three years later in 1949 with the Bolocan Award in psychology. Bandura went to the University of Iowa to complete his graduate work. At the time the University of Iowa was central to psychological study, especially in the area of social learning theory. Bandura completed his Master's in 1951 followed by a Ph.D. in clinical psychology in 1952. After completing his doctorate, Bandura went onto a postdoctoral position at the Wichita Guidance Center before accepting a position as a faculty member at Stanford University in 1953. Bandura has studied many different topics over the years, including aggression in adolescents (more specifically he was interested in aggression in boys who came from intact middle-class families), children's abilities to self-regulate and self-reflect, and of course self-efficacy (a person's perception and beliefs about their ability to produce effects, or influence events that concern their lives).

Bandura is perhaps most famous for his Bobo Doll experiment in the 1950's. At the time there was a popular belief that learning was a result of reinforcement. In the Bobo Doll Experiment, Bandura presented children with social models of novel (new) violent behavior or non-violent behavior towards the inflatable redounding Bobo Doll. The children who viewed the violent behavior were in turn violent towards the doll; the control group was rarely violent towards the doll. Bandura and his colleagues Dorrie and Sheila Ross showed that social modeling is a very effective way of learning. Bandura went on to incorporate social modeling into his views on social learning theory which had a huge impact on psychology in the 1980's. Social learning theory focuses on what people learn from observing and interacting with other people. Bandura is highly recognized for his work in social learning and social cognitive theory-a theory that states people are active participants in their environment and are not simply shaped by that environment.

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Social Cognitive Theory

Social cognitive theory (SCT) refers to a psychological model of behavior that emerged primarily from the work of Albert Bandura (1977; 1986). Initially developed with an emphasis on the acquisition of social behaviors, SCT continues to emphasize that learning occurs in a social context and that much of what is learned is gained through observation. SCT has been applied broadly to such diverse areas of human functioning as career choice, organizational behavior, athletics, and mental and physical health. SCT also has been applied extensively by those interested in understanding classroom motivation, learning, and achievement (Pajares, 1996; Schunk & Zimmerman, 1994; 1998).

SCT rests on several basic assumptions about learning and behavior. One assumption concerns triadic reciprocality, or the view that personal, behavioral, and environmental factors influence one another in a bidirectional, reciprocal fashion. That is, a person's on-going functioning is a product of a continuous interaction between cognitive, behavioral, and contextual factors. For instance, classroom learning is shaped by factors within the academic environment, especially the reinforcements experienced by oneself and by others. At the same time, learning is affected by students' own thoughts and self-beliefs and their interpretation of the classroom context.

A closely related assumption within SCT is that people have an agency or ability to influence their own behavior and the environment in a purposeful, goal-directed fashion (Bandura, 2001). This belief conflicts with earlier forms of behaviorism that advocated a more rigorous form of environmental determinism. SCT does not deny the importance of the environment in determining behavior, but it does argue that people can also, through forethought, self-reflection, and self-regulatory processes, exert substantial influence over their own outcomes and the environment more broadly.

A third assumption within SCT is that learning can occur without an immediate change in behavior or more broadly that learning and the demonstration of what has been learned are distinct processes. One reason for this separation is that SCT also assumes that learning involves not just the acquisition of new behaviors, but also of knowledge, cognitive skills, concepts, abstract rules, values, and other cognitive constructs. This division of learning and behavior is a shift from the position advocated by behavioral theories that defined learning stridently as a change in the form or frequency of behavior. It also means that students can learn but not demonstrate that learning until motivated to do so.

HISTORICAL ORIGINS OF SCT

Born in 1925, Albert Bandura was trained and began his career in the mid-twentieth century when explanations of human functioning, including classroom learning, were dominated by behavioral models advocated by researchers such as B. F. Skinner, Clark Hull, Kenneth Spence, and Edward Tolman. In this context, Bandura, along with his students and colleagues, initiated a series of studies designed to examine social explanations for why and when children displayed aggressive behaviors. These studies demonstrated the value of modeling for acquiring novel behaviors and provided initial evidence for the separation of learning and performance. They also indicated the importance of the learner's perceptions of the environment generally, of the person modeling a behavior specifically, and of the learner's expectations regarding the consequences of behavior. In doing so, findings from this systematic research contradicted assumptions within behavioral models that learning was the result of trial and error learning or that changes in behavior were due primarily to the consequences of one's own actions.



Children learn by observing others. JENNY ACHESON/RISER/GETTY IMAGES.

By the mid 1970s these studies helped form the foundation for what Bandura initially called observational learning theory and then later social learning theory (Bandura, 1977). This precursor to SCT established a viable model for understanding how people learned through observation of models. Additional work during this time expanded aspects of the theory dealing with abstract modeling, language, and conceptual learning. In the years that followed, SCT continued to evolve, spurred by the work of Bandura and his colleagues stressing the processes of goal setting, self-efficacy, and self-regulation. The evolution of SCT also drew ideas from information processing models of psychological functioning to describe the cognitive processes that mediate learning. Ultimately, Bandura noted in the preface to his 1986 treatise, *Social Foundations of Thought and Action: A Social-Cognitive Theory,* that, in an effort to be inclusive of these more motivational and cognitive processes, he was using the label "social cognitive theory" rather than social learning to describe his framework. Throughout this book, Bandura describes the philosophical and conceptual foundation for SCT and reviews empirical evidence for its main components. Hence, it provides a concrete milestone for the birth of contemporary SCT. Since that time, SCT has continued to grow and expand especially with regard to the work on self-efficacy, self-regulation, and agency (Bandura, 1997; 2001; Zimmerman, 2000).

CORE CONCEPTS WITHIN SCT

SCT integrates a large number of discrete ideas, concepts, and sub-processes into an overall framework for understanding human functioning. Five of the central concepts are described below. For a more complete explanation of SCT, readers are directed to works by Bandura and to the relevant chapters within textbooks on learning.

Observational Learning/Modeling. From its inception one core premise within SCT has been that people learn through observation. This process is also described as vicarious learning or modeling because learning is a result of watching the behavior and consequences of models in the environment. Although observational learning is dependent upon the availability of models, who or what can serve this role is

defined broadly. Live demonstrations of a behavior or skill by a teacher or classmate, of course, typify the notion of modeling. Verbal or written descriptions, video or audio recordings, and other less direct forms of performance are also considered forms of modeling. There also distinctions among different types of models. Mastery models are proficient when demonstrating a skill, whereas coping models struggle, make mistakes, and only eventually show proficiency. Abstract modeling occurs when the skill or knowledge being learned is conveyed only indirectly, and cognitive modeling occurs when a model verbalizes her thoughts while demonstrating a cognitive process or skill.

According to SCT, observational learning of novel behaviors or skills is dependent on four inter-related processes involving attention, retention, production, and motivation. Attentional processes are critical because students must attend to a model and the relevant aspects of behavior in order to learn. Retention refers to the processes necessary for reducing and transforming what is observed into a symbolic form that can be stored for later use. Production processes are necessary when students draw on their stored codes and make an effort to perform what they have observed. Finally, motivational processes are key for understanding why students engage in the prior sub-processes, including whether they ever attempt to use or recreate the new skills they have observed. Each of these processes, furthermore, are affected by factors such as the developmental level of the learner and characteristics of the model and modeled behavior.

Beyond new learning, modeling is also important for understanding when or why previously learned behaviors are exhibited. Students' may inhibit their engagement in a behavior if they observe a model suffer consequences they would prefer to avoid. For instance, if a teacher glares at one student who is talking out of turn, other students may suppress this behavior to avoid a similar reaction. In a related fashion, students may disinhibit or engage in a behavior they had initially suppressed when they fail to see any negative consequences accrue to a model. For example, students may refrain from shouting out answers unless they are called upon only until they see others do so without repercussions. Finally, through a process labeled response facilitation, models can simply prompt others to behave in known ways.

Outcome Expectations. Outcome expectations reflect individuals' beliefs about what consequences are most likely to ensue if particular behaviors are performed. For instance, children may believe that if they get a hit during a baseball game the crowd will cheer, they will feel good and will be admired by their teammates. These beliefs are formed enactively through students' own past experiences and vicariously through the observation of others. Outcome expectations are important in SCT because they shape the decisions people make about what actions to take and which behaviors to suppress. The frequency of a behavior should increase when the outcomes expected are valued, whereas behaviors associated with unfavorable or irrelevant outcomes will be avoided.

Perceived Self-efficacy. Self-efficacy also has emerged as a prominent and influential concept within SCT. Self-efficacy reflects individuals' beliefs about whether they can achieve a given level of successful at a particular task (Bandura, 1997). Students with greater self-efficacy are more confident in their abilities to be successful when compared to their peers with lower self-efficacy. Self-efficacy has proven useful for understanding students' motivation and achievement in academic contexts. Higher levels of perceived self-efficacy have been associated with greater choice, persistence, and with more effective strategy use (Pajares, 1996).

Consistent with the tenets of SCT, self-efficacy is viewed as a product of individuals' own past performances, the observation and verbal persuasion of others in the environment, and individuals' on-

going physiological state (Bandura, 1997). Rather than directly affecting their self-efficacy, however, these sources of information are weighed and filtered through a process known as cognitive appraisal. For instance, a prior failure may not be detrimental to self-efficacy if students believe there was some no-longer relevant reason for the poor performance (e.g., prior sickness). Interventions based on SCT and designed to increase self-efficacy in school-aged children have proven effective (Pajares, 1996).

Goal Setting. Goal setting is another central process within SCT (Bandura, 1986; Schunk, 1990). Goals reflect cognitive representations of anticipated, desired, or preferred outcomes. Hence, goals exemplify the agency view within SCT that people not only learn, they use forethought to envision the future, identify desired outcomes, and generate plans of action. Goals are also closely related to other important processes within SCT. For instance, models can provide goals in the form of specific behavioral outcomes or more general standards for acceptable levels of performance. Goals also are intricately related to students' outcome expectations and their perceived self-efficacy. Goals are a function of the outcomes students expect from engaging in particular behaviors and the confidence they have for completing those behaviors successfully. Finally, goals are an important prerequisite for self-regulation because they provide objectives that students are trying to achieve and benchmarks against which to judge progress.

Self-regulation. Research on self-regulation or, when applied to academic contexts, self-regulated learning, blossomed in the 1980s and continued into the early 2000s to expand. Explanations for students' management or control of their own learning behaviors have arisen from within many distinct theoretical perspectives (Zimmerman & Schunk, 2001). Many of the most common models, however, have strong roots in SCT. SCT models of self-regulation assume that self-regulation is dependent on goal setting, in that students are thought to manage their thoughts and actions in order to reach particular outcomes (Schunk, 2001; Zimmerman, 2000). SCT views of self-regulation initially emphasized three sub-processes (Bandura, 1986; 1991). Self-observation reflects students' ability to monitor or keep track of their own behaviors and outcomes. Self-judgment is the process through which students' evaluate whether their actions are effective and allow them to make progress toward their goals. Finally, self-reaction occurs when students' respond to the evaluations they have made by modifying their behavior, rewarding it, or discontinuing it.

Self-regulation is a prominent and increasing aspect of SCT that exemplifies the underlying assumptions regarding agency and the influence of personal factors on behavior and the environment. As noted above, self-regulation is also dependent on other processes within SCT, including goal setting and self-efficacy. Unless students have goals and feel efficacious about reaching them, they may not activate the processes needed for self-regulation. Modeling can also affect students' self-regulated learning. The skills needed to manage one's behavior, as well the beliefs and attitudes that serve to motivate self-regulation, can be obtained through modeling.

TELEVISION: EDUCATOR'S FRIEND OR FOE?

From its inception, television has been considered a behavioral stimulus (Vos Post, 1995). Factors that impact research on the influence television has on behavior include socio-economic status and rural versus urban settings, as well as factors that are pertinent to the nature and culture of the local society. Is a “shoot 'em up” cops and robbers television programming any more violent than a news report of a suicide bomber in the Middle East? Should children be shielded from viewing either or both of those programs on television? The social cognitive theory of behavior learned through observation expounded by Bandura (2001) has been related to television as well as to the classroom and home environments.

Young children are particularly unable to discriminate between the fiction of television and real life. Research shows that they are likely to apply the aggressive behaviors they have seen on television to the playground as early as nursery school age. According to Ortiz (2007), they internalize behaviors that they observe even though they have not experienced them directly.

In 1995 Aronson defined aggression as “behavior causing harm or pain.” In that same year, Vos Post added that “we still have no widely-accepted, clear-cut, and scientific definition for either the aggressive acts on television or those purportedly caused by television by its audience.” In the mid-1990s researchers counted an average of 18 acts of aggression per hour during the Saturday morning cartoons that continue in the 21st century to be popular with young children. George Gerbner has reported that violent acts take place five or six times per hour during prime time and Saturday morning television. In addition, eight of ten television programs include some sort of violence.

Vos Post (1995) stated that programming on U.S. television was no more aggressive than it had been historically. He went on to report that television programming in Japan had a much higher level of violence than television programming in the United States. However, there are considerably lower rates of aggression in Japan than in the United States, which contradicts the argument that aggressive behavior is learned or encouraged by viewing violence on television.

When Bandura's social cognitive theory, which suggests that children learn through observation, is extended to television viewing, it would seem to indicate that children would learn aggressive behavior through observation of violence on television. It also means that if children observe positive behaviors in television programming, they should emulate those behaviors as well. Bandura's theory states that when children see behavior modeled, they will accept it and use it when they deem it appropriate. It also explains the need for positive role models on television for children.

According to Bandura's social cognitive theory, when children see family members or friends working together on a television situation comedy to resolve a problem, it follows that they will try to resolve problems with their own family members or friends peacefully, by working together, instead of fighting with them. Research on the results of this type of modeled behavior is reported to be difficult, with inconclusive results.

According to Hoffner (1996), Bandura's theory of behaviors learned by observation means that young viewers have to identify with the characters to model either pro-social or violent behavior. In other words, if a child observes television characters that she or he perceives as being similar to herself or himself, that child will be more likely to behave in a manner similar to those characters.

Educational programming is based on Bandura's theory of modeled behavior. To be effective with prosocial behaviors, television programmers have to conduct extensive research and make sure characters and events portrayed in their shows have a relation to real-world situations. They also have to carefully create characters who are positive, with good results from their actions; negative, with undesirable results from their actions; and transitional, who start the show as negative characters but change because of decisions made and actions taken, so they become positive role models by the end of the show.

Violent acts in regular television programming have more of an effect on children's behavior than sports programming. The results of research on the effect that violence on television has on students generally are in agreement that children who observe violence in prime time television or on Saturday morning

children's shows that do not include sports programming will behave aggressively whether or not they had were pre-disposed to behave aggressively.

A real concern with the effects of television violence and aggressive behavior learned by observation of incidents of violent programming is that this learning has been proven to continue through adolescence and into adulthood. Vos Post (1995) concluded: “Not only because television violence is a reality, and aggression is a fact of life, but because an effective social psychology understanding of the relationship between television and behavior may help to not only reduce socially unacceptable aggression, but may actually enable us to increase socially desirable effects.”

IMPLICATIONS FOR CLASSROOM INSTRUCTION

One strength of SCT is that it provides a clear foundation for classroom interventions designed to improve students' learning. In this section, several general implications for instruction derived from the key concepts described above are described. More complete treatments of the instructional implications of SCT readers are available elsewhere (e.g., Linares et al., 2005; Paris & Paris, 2001; Zimmerman, Bonner, & Kovach, 1996).

Observational Learning/Modeling**.** The most basic instructional implication of SCT is that students should be provided frequent access to models of the knowledge, skills, and behaviors they are expected to learn. For example, teachers should model the behaviors and cognitive processes they want students to learn. Effective instruction, moreover, should include multiple types of models (e.g., teacher, peers, parents) and various forms of modeling (e.g. cognitive, verbal, mastery, coping). The inhibitory and disinhibitory effects of modeling, further, necessitate that educators administer rewards and punishments in a careful and consistent manner.

More specifically, instruction based on SCT should support students' engagement in each of the four sub-processes of observational learning. Students' attention can be increased by using models that are viewed as competent, prestigious, and similar to themselves. Students also pay closer attention when the skill or material being demonstrated is considered more personally relevant or interesting. Instruction should support students' retention by facilitating the creation of verbal labels or images through the use of mnemonics, graphic organizers, or other similar learning strategies. Opportunities for rehearsal, both in the form of repeated exposure to models and in the form of time to reflect on the material or skills also assist retention. The effective use of models depends on providing students multiple opportunities to practice the behaviors or skills they have observed. This process will be improved if students are provided feedback about their efforts that is specific, more immediate, and insightful about what the learner is doing well and what needs improvement. Teachers should support the motivational aspects of observational learning through the purposeful use of rewards and punishments. These consequences, further, should shape students' behavior when they are provided either to the learner or to a model. To improve motivation, teachers should also model attitudes that they want students to adopt such as enthusiasm or interest in the material.

Outcome Expectations. Instruction should help students to see that classroom learning and the demonstration of that learning leads to personally valued or important outcomes. Students must believe that, if they complete learning tasks successfully, the outcomes they achieve are meaningful, useful, or worthy of the effort necessary to reach them. To encourage these beliefs, teachers should create lessons that emphasize real-world applications and the relevance of material to students' own lives. Decontextualized instructional practices that obfuscate the benefits of learning should be avoided.

Perceived Self-Efficacy. Students will be more active, effortful, and effective learners when they are confident in their ability to complete academic tasks successfully. Hence, instruction should be designed in a way that helps them to develop and sustain their self-efficacy for learning. Most simply, tasks should be moderately challenging so that students do well and make progress when providing reasonable effort. Teachers should ensure that students have the prerequisite knowledge and strategies needed to be successful at more complex and rigorous tasks. In this way, students will develop a pattern of success that fosters positive levels of self-efficacy. Self-efficacy can also be improved when students are exposed to peer models who initially struggle but who ultimately are able to complete tasks effectively (i.e., coping models). Finally, teachers can make direct statements to learners or models as a way to boost their confidence. Such statements, however, must be credible or they will be discounted or ignored by learners.

Goal Setting**.** Instruction should help students to set effective goals by addressing the properties found in the most effective goals (Schunk, 1990). Instructional practices should promote students' efforts to set attainable goals that are clear, specific, and moderately challenging. In order to show progress and to maintain self-efficacy, learning goals should be attainable with moderate levels of effort. These goals will also reduce disappointment and frustration that students might feel if they fail to reach their goals. Specific goals are more effective than general or vague goals in spurring students to action and in guiding their behavior. Students should have both distal and more short-term goals for their learning in school. However, proximal goals are more effective at guiding behavior because they allow for more immediate feedback about progress. Finally, goals that students set or endorse themselves have a bigger impact on their behavior than goals that are assigned. Hence, instruction should help students develop the ability and willingness to form their own academic goals.

Self-Regulation. According to SCT, all students should be supported in their efforts to be self-regulated learners. In addition to fostering self-efficacy and effective goal setting, teachers should help students become skilled at self-observation, self-judgment, and self-reaction (see Zimmerman et al., 1996). Teachers can promote self-observation by helping students learn how to monitor different aspects of their academic behavior. Practices such as journal writing, checklists, and time for self-reflection help students develop these skills. For self-judgment, students must learn how to evaluate their performance in light of the goals or standards they have set. Teachers can facilitate this process through modeling and by supporting students' own efforts to compare their performance to both absolute and normative standards. Teachers should also help students see the value and relevance of the standards in order to encourage their self-judgment. The self-reaction process depends on students' ability to respond adaptively both when they are making progress and when they are not. For the former, instructional practices should assist students in learning how to self-administer reinforcements for their own efforts using both concrete and internal rewards. For the latter, instruction should support students in their efforts to evaluate and modify their learning strategies in order to improve progress. As with all skills, students can development these self-regulatory abilities vicariously and with guided opportunities to practice them firsthand.

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CHAPTER 4

Vygotsky: Social Cultural Learning

INTRODUCTION

Lev Semyonovich Vygotsky (1896-1934) was born in Russia in 1896. He graduated with a law degree from Moscow University. Vygotsky's first big research project was in 1925 with a focus on psychology of art. A few years later, he pursued a career as a psychologist working with Alexander Luria and Alexei Leontiev. Together, they began the Vygotskian approach to psychology. Vygotsky had no formal training in psychology but it showed that he was fascinated by it. After his death of tuberculosis in 1934, his ideas were repudiated by the government. However, his ideas were kept alive by his students. When the Cold War ended, Vygotsky's works were revealed. Vygotsky has written several articles and books on the subject of his theories and psychology, including *Thought and Language* (1934).

Vygotsky is best known for being an educational psychologist with a sociocultural theory. This theory suggests that social interaction leads to continuous step-by-step changes in children's thought and behavior that can vary greatly from culture to culture (Woolfolk, 1998). Basically Vygotsky's theory suggests that development depends on interaction with people and the tools that the culture provides to help form their own view of the world. There are three ways a cultural tool can be passed from one individual to another. The first one is imitative learning, where one person tries to imitate or copy another. The second way is by instructed learning which involves remembering the instructions of the teacher and then using these instructions to self-regulate. The final way that cultural tools are passed on to others is through collaborative learning, which involves a group of peers who strive to understand each other and work together to learn a specific skill (Tomasello, et al., 1993).

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The Contribution of Vygotsky's Theory to Our Understanding of the Relation
Between the Social World and Cognitive Development

Abstract

Discussion is given on the contribution of Vygotsky's ideas to the understanding of the relation between the social world and cognitive development. Particular attention is given to the significance of culture, the role of language, and the student's relationship with (and development within) this social world. In doing so, some similarities and contrasts between other learning theorists, specifically Piaget, are briefly discussed. Vygotsky's views of the integrated and dynamic social-nature of learning are described, and the notion of a zone of proximal development, which utilizes such ideas, is introduced. Vygotsky's ideas on cognitive development are shown to lead to student-centered and a co-constructivist basis of learning, in which the student potential within the social context is accommodated.

Introduction

The relationship between the social world and cognitive development has been considered by several investigators, such as Piaget (1959), Vygotsky (1978), Bandura (1977), Rogoff (1990) and Wood (1998). A commonality of the various theories is that student learning is not viewed as a simple process of information transfer from a source (teacher, parent, computer), but often involves an active social interaction in which, for example, a student constructs knowledge through discovery and experiment (Piaget), learns through imitation or observation (Bandura), or relies upon teacher support which is congruent with the student's immediate (proximal) potential for learning (Vygotsky). The work of Vygotsky gives particular attention to the inter-relationships between macro-social (i.e. cultural-historical) and micro-social (i.e. interpersonal) influences on cognitive development, and thus social influences on learning in a broad sense. External social forces are viewed as important in the learner's development, in which the learner is considered an apprentice (see, also, Rogoff, 1990) requiring the guidance, facilitation and support of teachers. This view is often contrasted with that of Piaget's theory, in which the main forces driving cognitive development of a student are seen as within the individual (i.e. the student as a scientist), constrained to some extent by developmental stages (see, for example, the discussions of Lefrancois, 1999).

In the following sections, attention will be given to the ideas of Vygotsky on the relationship between the social world and cognitive development. In particular, the influences of culture, history and language on development will be considered, and a proposed mechanism of cognitive development through notions of student potential described. The specific implications of these ideas for educators will then be considered.

Cognitive Development and the Social World

As indicated above, the social world as defined by Vygotsky considers not only the interpersonal interactions between, say, a student and teacher, or student and peer, but also the broader socio-cultural and historical influences on learning and the learning environment. The underlying themes of Vygotsky's theory on cognitive development have thus often been summarized as: (i) the significance of culture, (ii) the role of a principal proponent of culture: language, and (iii) the student's relationship with (and development within) this social (cultural) world. In this context, culture is viewed as socially accepted behaviors, attitudes and beliefs, and is constructed through human societal products such as institutions, symbol systems and tools such as language. Culture in this sense, is a dynamic outcome of historical events and developments, and thus products of human development. However, as emphasized by Vygotsky, at any particular historical time, culture itself will influence human mental functioning and behavior, and thus a complex (integrated) relationship between the cultural environment and personal development. In other words, humans are not only producing culture, but are also products of culture themselves.

The cultural influences on childhood development can be exemplified through the elementary and higher mental notions of Vygotsky. The former describes innate functions or characteristics of a young child such as responding to a mother's voice and crying for a need. In the course of development,

perhaps through operant conditioning, imitation, perception or some limited cognitive evaluation, elementary functions are gradually transformed into higher mental functions such as problem solving, logic, and propositional and hypothetical thinking. Vygotsky believed that this transformation is strongly influenced by culture. For example, culture results in language and other symbolism which perhaps define non-primitive consciousness (see below), and create the social processes and pressures (motives) for adopting the patterns of behavior and attitudes which are characteristic of that culture.

Vygotsky believed that language makes thought possible and is thus the basis of consciousness. Without language his view was that human development could not exceed that of primitive sense and perception functions, characteristic of lower forms of mammalian life. Language was also seen as the tool of culture which enables social interaction, and thus the direction of behavior and attitudes, and indeed the propagation and development of culture itself. The specific and early relationship of language and cognition can be identified through three key stages in the development of speech: social, egocentric and inner speech (see, for example, Vygotsky, 1986). Social or external speech dominates the first stage of language development, and is a means by which young children (typically up to the age of 3) express emotions or simple thoughts. The speech is principally used for control of behavior of others, but also acts as a means of conveying early social influences such as parental tolerances of behavior. Such influences inevitably lead to the restructuring of thoughts, and thus cognition. Egocentric speech occurs between the ages of 3 and 7 and describes an intermediate stage of language development between external speech and inner thoughts (see below). In this stage, the child will often talk to him or herself in an effort to control their own behavior or justify actions or approaches to a task. With maturity, egocentric speech becomes inner speech (self-talk), which has also been referred to as the stream of consciousness by James (1890). Vygotsky believed that inner speech enables individuals to direct and organize thought, and thus an important proponent of higher mental functioning. Hence, the set of arbitrary and conventional symbols which are used to convey meaning, but which are culturally determined in form and interpretation, become a part of the individual’s cognitive being.

Closely related to the formation of inner speech is the concept of internalization. This involves the internal acceptance (perhaps with individual modification or interpretation) of social (external) values, beliefs, attitudes or standards, as one’s own. In this sense, the psychological make-up of the individual is altered through internalization, and provides a dynamic mechanism by with the inter-social becomes the intra-social. However, such a mental adoption processes should not be confused with processes such as introjection or socialization. The former describes internalization in which there is little active participation by the individual; c.f. operant learning, and indeed some forms of hypnosis. In contrast, socialization describes a pseudo-internalization process in which apparent beliefs arise from a need to conform to society rather than any actual commitment. Internalization as viewed by Vygotsky therefore, represents a genuine, participative and constructed process, but nevertheless determined by socio-cultural influences. As indicated above, the outcome of internalization is that inter-personal or personal-cultural influences, become transformed into intrapersonal characteristics. Thus, every function in the child’s cognitive development, such as attention, logic or concept formation, appears twice: first on the social level and then on the individual level (Vygotsky, 1978).

An important implication of the above ideas is that there is much opportunity through the school system to influence the cognitive development of children. For example, through language, the presentation and interpretation of history and current affairs, and the attitudes, beliefs and values of teachers (or significant others), the thought patterns and beliefs of students may be shaped. Unlike Piaget, who believed that children construct their own ideas of the world, Vygotsky's ideas suggest that student-teacher and student-peer relationships are of prime importance of generating and facilitating new ideas, perspectives and cognitive strategies. Furthermore, the student apprentice can be seen to be active within their learning environments, attempting to construct understanding where possible, and possibly contribute to or affirm with the adopted culture. In turn, this aspect of human development inevitably has influence on the environment itself, and thus a dialectic process in which learning and development is affected by the social world, and the social world changed through learning and development (see, for example, Tudge, & Winterhoff, 1993). In a similar way, Vygotsky has argued that natural (i.e. biological) and cultural development coincide and merge to form a dynamic and integrated socio-biological influence on personality (Vygotsky, 1986).

A second important implication of Vygotsky's views is that rather than deriving explanations of a student's psychological activity (e.g. intelligence and motivation) from the student's characteristics, attention should be given to student behavior and performance when engaged in a social situation. Vygotsky in specific postulated the notion of a zone of proximal development (ZPD) which defines the difference between the child's independent learning accomplishments, and accomplishments under the guidance of a person who is more competent at the specific task at hand. Vygotsky particularly viewed adults, rather than peers, as key in this relationship, perhaps because adults are more likely to be truly competent in the task, and thus less likely to cause regression rather than progression in the collaboration (Tudge & Winterhoff, 1993)). The maximization of potential was then viewed as a social process, which challenges the traditional notions of intelligence testing with psychometric tests. For example, emphasis is given to the potential of the student and its social contextualization, rather than current cognitive abilities measured independently of a social context. However, this notion of potential does not necessarily imply an intelligence level, since the ZPD is a dynamic assessment which may be complicated through the various student-specific influences of the social learning environment. Past experiences (prior knowledge), personality attributes, locus of control, and self-esteem for example, may all have possible influences on the efficacy of learning through the social interaction. Likewise, as a further complexity, the ZPD is not a well-defined space, but created in the course of the social interaction (Tudge & Winterhoff, 1993). Nevertheless, the notion of the ZPD gives importance to the student-centered basis of education, and suggests that the individual progression towards an overall learning outcome will be dictated by the guided and subjective accomplishments of intermediate (proximal) outcomes.

Educational Implications

Although the social influences on cognitive development have been considered by other researchers, such as Piaget and Bandura, Vygotsky emphasized that individual development is inherently integrated with cultural, historical and inter-personal factors. Furthermore, Vygotsky viewed the individual in the social context as the unit of analysis in development, rather than the sole individual. In other words,

whilst the internalization of thoughts, attitudes, and beliefs have been widely accepted to be socially influenced, further higher mental development is postulated by Vygotsky to be inseparably dependent upon social interactions, and indeed new understanding is not necessarily viewed as an external feature to be adopted by the student, but something which is created in the process of the social (teaching) interactions (Tudge & Winterhoff, 1993). Some general implications of Vygotsky's ideas on the social influences on cognitive development have been mentioned above, and can be summarized as:

- the central role of the teacher-student (dyad) relationship in learning
- the inherent cultural and immediate-social influences upon the students attitudes and beliefs towards, for example, learning, schooling, and the education philosophy
- the importance and power of language as a primary tool for the transference of socio-cultural influences upon the child
- the benefits of student-centered teaching, whereby the student can efficiently progress within their potential towards a learning outcome; i.e. constructing knowledge through social interaction (or co-constructivism (see Tudge & Winterhoff, 1993)

Further specific educational implications of the above points arise when considering practical teaching within schools. For example, given a child with particular personality traits and temperament, how should a teacher instigate a teaching objective which is congruent with Vygotskian ideas? The ZPD describes what a student can accomplish with the help of competent support, therefore it describes the actual task that can be effectively supported by the teacher. Although this may seem a rather circular argument, the implication here is that teachers need to continuously evaluate how effectively a student is progressing in a learning activity and respond accordingly with modified tasks or intermediary learning objectives. In other words, students should be given frequent opportunities to express understanding, and learning tasks fine-tuned by the teacher to address individual capabilities. Such teacher support, which is graduated and task-apportioned based on student needs, has been commonly referred to as scaffolding, which symbolizes strong initial teacher support which is gradually reduced as the student approaches the desired learning outcome. In specific, scaffolding may range from very detailed and explicit tuition, such as the explanation of procedures and demonstrations, to the facilitation or organization of activities for student self-tuition. Scaffolding has also been interpreted as a mechanism by which sequential ZPD's are used to achieve a learning outcome beyond a child's immediate (starting) potential, and thus the specific learning activities change as the student competence towards the ultimate task grows (see, for example, Biggs & Moore, 1993). The notion of ZPD also suggests that effective teaching should not only be within the proximate potential of the individual, but should perhaps be at the upper-level of the ZPD so as to maintain the student interest in the activity.

But how are the above teaching implications of ZPD different from what experienced teachers naturally do? As stated earlier, the social interaction aspect is a key emphasis in the learning process, and therefore the student needs to be active in the learning interaction, and in collaboration with the teacher. Where teaching logistics dictate large classes, small group work should be encouraged whereby peer-support and improved teacher interaction can be maintained. However, as mentioned earlier, overt reliance on peer-support could cause regression in some cases, and requires careful evaluation and support by the teacher. Furthermore, in an educational context, a teacher is likely to prove the best role

model, i.e. the best conveyer of culturally esteemed factors pertaining to education; see also the discussions of Biggs and Moore (1993) on modelling in learning.

The use of language related activities in the school environment are also indicated to be of importance to cognitive development. For example, the development of communication skills may influence the clarity and breadth of inner speech, and thus thought patterns. However, care is needed in the degree of literal interpretation of such influences, which may incorrectly suggest, for example, that students with difficulties in expressing themselves, or grasping subtle meanings in language, are necessarily poor in cognitive ability. Furthermore, certain abilities such as bodily-kinesthetic and musical skills, may not necessarily be best represented through language-based thought. However, at an early school age, the development of language is likely to be an enabling tool towards other educational abilities, which in our current cultural setting have a cognitive bias.

Finally, an interesting issue which arises through consideration of Vygotskian views is the specific role and advantages of computer-based learning. Here, in one sense, social interaction is removed, but in another, may be replaced by an interactive and responding interface, which could perhaps evaluate and respond to the users ZPD. Such sophisticated computation would inevitably rely on expert-systems type technologies, such that there is an intelligent (e.g. humanly adaptive like) response to user queries and misunderstandings. The relatively unsophisticated nature of many current educational software, even those which are stated to be interactive, may explain the current mixed results of such software.

Conclusions

The influence of the social world on cognitive development has been considered through the views of Vygotsky. The dynamic relationships between culture, history, interpersonal interactions and psychological development have been described, and the important role of language as a common and conducting medium discussed. One specific educational application of such ideas is through the ZPD, which emphasizes the importance of the social aspect of learning, and particularly the student-centered and co-constructivist basis of learning in which the individual’s potential within the social context is addressed. Such ideas have had impact on the school system by challenging teacher-directed (as opposed to student-centered) learning programs, and perhaps emphasize the care needed in, for example, computer-based and distance learning teaching initiatives.

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CHAPTER 5

Moral Development

INTRODUCTION

Lawrence Kohlberg (1927-1987) was a 20th century psychologist known primarily for his research into moral psychology and development. Lawrence Kohlberg was born in Bronxville, New York on October 25, 1927. He received his Ph.D. in psychology from the University of Chicago in 1958. His dissertation was based on his research into the moral choices of adolescent boys and led to a life devoted to the exploration of moral and ethical development in young people. In 1962, he returned to the University of Chicago as an assistant professor. Kohlberg died of an apparent suicide in 1987, after a long battle with depression coupled with painful symptoms from a tropical parasite he had contracted in Belize in 1971.

Kohlberg’s stages of moral development were influenced by the Swiss psychologist Jean Piaget’s stage-based theory of development. Kohlberg expanded on Piaget’s two stages, identifying six stages of moral development. He argued that correct moral reasoning was the most significant factor in moral decision-making, and that correct moral reasoning would lead to ethical behavior. Kohlberg believed that individuals progress through stages of moral development just as they progress through stages of cognitive development. Kohlberg’s theory of moral development included three levels and six stages. To determine which stage of moral development his subjects were in, Kohlberg presented them with invented moral dilemmas, such as the case of a man who stole medicine for his sick wife. According to Kohlberg, few people reach stages five and six; most tend to stay at stage four. Kohlberg purported that women were often at a lower stage of moral development than men, but psychologist Carol Gilligan questioned his findings. Gilligan claims that women place a stronger emphasis on caring and empathy, rather than on justice. She developed an alternative scale, heavily influenced by Kohlberg's scale, that showed that both men and women could reach advanced stages of moral development.

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Source: Absolute Astronomy. (n.d.). Kohlberg’s stages of moral development. Retrieved from http://www.absoluteastronomy.com/topics/Kohlberg%27s_stages_of_moral_development

Kohlberg’s Stages of Moral Development

Lawrence Kohlberg's stages of moral development constitute an adaptation of a psychological theory originally conceived of by the Swiss psychologist Jean Piaget. Kohlberg began work on this topic while a psychology postgraduate student at the University of Chicago in 1985, and expanded and developed this theory throughout his life.

The theory holds that moral reasoning, the basis for ethical behavior, has six identifiable developmental stages, each more adequate at responding to moral dilemmas than its predecessor. Kohlberg followed the development of moral judgment far beyond the ages studied earlier by Piaget, who also claimed that logic and morality develop through constructive stages. Expanding on Piaget's work, Kohlberg determined that the process of moral development was principally concerned with justice, and that it continued throughout the individual's lifetime, a notion that spawned dialogue on the philosophical implications of such research.

Kohlberg relied for his studies on stories such as the Heinz dilemma, and was interested in how individuals would justify their actions if placed in similar moral dilemmas. He then analyzed the form of moral reasoning displayed, rather than its conclusion, and classified it as belonging to one of six distinct stages.

There have been critiques of the theory from several perspectives. Arguments include that it emphasizes justice to the exclusion of other moral values, such as caring; that there is such an overlap between stages that they should more properly be regarded as separate domains; or that evaluations of the reasons for moral choices are mostly *post hoc* rationalizations (by both decision makers and psychologists studying them) of essentially intuitive decisions.

Nevertheless, an entirely new field within psychology was created as a direct result of Kohlberg's theory, and according to Haggbloom, et al.'s study of the most eminent psychologists of the 20th century, Kohlberg was the 16th most frequently cited psychologist in introductory psychology textbooks throughout the century, as well as the 30th most eminent overall.

Kohlberg's scale is about how people justify behaviors and his stages are not a method of ranking how moral someone's behavior is. There should however be a correlation between how someone scores on the scale and how they behave, and the general hypothesis is that moral behavior is more responsible, consistent and predictable from people at higher levels.

Stages

Kohlberg's six stages can be more generally grouped into three levels of two stages each: pre-conventional, conventional and post-conventional. Following Piaget's constructivist requirements for a stage model, as described in his theory of cognitive development, it is extremely rare to regress in stages-to lose the use of higher stage abilities. Stages cannot be skipped; each provides a new and necessary perspective, more comprehensive and differentiated than its predecessors but integrated with them.

Level 1 Pre-Conventional

1. Obedience and punishment orientation

(*How can I avoid punishment?*)

2. Self-interest orientation

(*What's in it for me?*)

(*Paying for a benefit*)

Level 2 Conventional

3. Interpersonal accord and conformity

(*Social norms*)

(*The good boy/good girl attitude*)

4. Authority and social-order maintaining orientation

(*Law and order morality*)

Level 3 Post-Conventional

5. Social contract orientation

6. Universal ethical principles

(*Principled conscience*)

Pre-Conventional

The pre-conventional level of moral reasoning is especially common in children, although adults can also exhibit this level of reasoning. Reasoners at this level judge the morality of an action by its direct consequences. The pre-conventional level consists of the first and second stages of moral development, and is solely concerned with the self in an egocentric manner. A child with pre-conventional morality has not yet adopted or internalized society's conventions regarding what is right or wrong, but instead focuses largely on external consequences that certain actions may bring.

In Stage one (obedience and punishment driven), individuals focus on the direct consequences of their actions on themselves. For example, an action is perceived as morally wrong because the perpetrator is punished. "The last time I did that I got spanked so I will not do it again." The worse the punishment for the act is, the more "bad" the act is perceived to be. This can give rise to an inference that even innocent victims are guilty in proportion to their suffering. It is "egocentric", lacking recognition that others' points of view are different from one's own. There is "deference to superior power or prestige."

Stage two (self-interest driven) espouses the "what's in it for me" position, in which right behavior is defined by whatever is in the individual's best interest. Stage two reasoning shows a limited interest in the needs of others, but only to a point where it might further the individual's own interests. As a result, concern for others is not based on loyalty or intrinsic respect, but rather a "you scratch my back and I'll scratch yours" mentality. The lack of a societal perspective in the pre-conventional level is quite different from the social contract (stage five), as all actions have the purpose of serving the individual's own needs or interests. For the stage two theorists, the world's perspective is often seen as morally relative.

Conventional

The conventional level of moral reasoning is typical of adolescents and adults. Those who reason in a conventional way judge the morality of actions by comparing them to society's views and expectations. The conventional level consists of the third and fourth stages of moral development. Conventional morality is characterized by an acceptance of society's conventions concerning right and wrong. At this level an individual obeys rules and follows society's norms even when there are no consequences for obedience or disobedience. Adherence to rules and conventions is somewhat rigid, however, and a rule's appropriateness or fairness is seldom questioned.

In Stage three (interpersonal accord and conformity driven), the self enters society by filling social roles. Individuals are receptive to approval or disapproval from others as it reflects society's accordance with the perceived role. They try to be a "good boy" or "good girl" to live up to these expectations, having learned that there is inherent value in doing so. Stage three reasoning may judge the morality of an action by evaluating its consequences in terms of a person's relationships, which now begin to include things like respect, gratitude and the "golden rule." "I want to be liked and thought well of; apparently, not being naughty makes people like me." Desire to maintain rules and authority exists only to further support these social roles. The intentions of actions play a more significant role in reasoning at this stage; "they mean well ..."

In Stage four (authority and social order obedience driven), it is important to obey laws, dictums and social conventions because of their importance in maintaining a functioning society. Moral reasoning in stage four is thus beyond the need for individual approval exhibited in stage three; society must learn to transcend individual needs. A central ideal or ideals often prescribe what is right and wrong, such as in the case of fundamentalism. If one person violates a law, perhaps everyone would-thus there is an obligation and a duty to uphold laws and rules. When someone does violate a law, it is morally wrong; culpability is thus a significant factor in this stage as it separates the bad domains from the good ones. Most active members of society remain at stage four, where morality is still predominantly dictated by an outside force.

Post-Conventional

The post-conventional level, also known as the principled level, consists of stages five and six of moral development. There is a growing realization that individuals are separate entities from society, and that the individual’s own perspective may take precedence over society’s view; they may disobey rules inconsistent with their own principles. These people live by their own abstract principles about right and wrong principles that typically include such basic human rights as life, liberty, and justice. Because of this level’s “nature of self before others”, the behavior of post-conventional individuals, especially those at stage six, can be confused with that of those at the pre-conventional level.

People who exhibit post-conventional morality view rules as useful but changeable mechanisms ideally rules can maintain the general social order and protect human rights. Rules are not absolute dictates that must be obeyed without question. Contemporary theorists often speculate that many people may never reach this level of abstract moral reasoning.

In Stage five (social contract driven), the world is viewed as holding different opinions, rights and values. Such perspectives should be mutually respected as unique to each person or community. Laws are regarded as social contracts rather than rigid edicts. Those that do not promote the general welfare should be changed when necessary to meet “the greatest good for the greatest number of people.” This is achieved through majority decision, and inevitable compromise. Democratic government is ostensibly based on stage five reasoning.

In Stage six (universal ethical principles driven), moral reasoning is based on abstract reasoning using universal ethical principles. Laws are valid only insofar as they are grounded in justice, and a commitment to justice carries with it an obligation to disobey unjust laws. Legal rights are unnecessary, as social contracts are not essential for deontic moral action. Decisions are not reached hypothetically in a conditional way but rather categorically in an absolute way, as in the philosophy of Immanuel Kant.

This involves an individual imagining what they would do in another's shoes, if they believed what that other person imagines to be true. The resulting consensus is the action taken. In this way action is never a means but always an end in itself; the individual acts because it is right, and not because it is instrumental, expected, legal, or previously agreed upon. Although Kohlberg insisted that stage six exists, he found it difficult to identify individuals who consistently operated at that level.

Further Stages

In Kohlberg's empirical studies of individuals throughout their life Kohlberg observed that some had apparently undergone moral stage regression. This could be resolved either by allowing for moral regression or by extending the theory. Kohlberg chose the latter, postulating the existence of sub-stages in which the emerging stage has not yet been fully integrated into the personality. In particular Kohlberg noted a stage 4½ or 4+, a transition from stage four to stage five, that shared characteristics of both. In this stage the individual is disaffected with the arbitrary nature of law and order reasoning; culpability is frequently turned from being defined by society to viewing society itself as culpable. This stage is often mistaken for the moral relativism of stage two, as the individual views those interests of society that conflict with their own as being relatively and morally wrong. Kohlberg noted that this was often observed in students entering college.

Kohlberg suggested that there may be a seventh stage—Transcendental Morality, or Morality of Cosmic Orientation—which linked religion with moral reasoning. Kohlberg's difficulties in obtaining empirical evidence for even a sixth stage, however, led him to emphasize the speculative nature of his seventh stage.

Theoretical Assumptions (Philosophy)

The picture of human nature Kohlberg begins with is that humans are inherently communicative and capable of reason. They also possess a desire to understand others and the world around them. The stages of Kohlberg's model relate to the qualitative moral *reasonings* adopted by individuals, and so do not translate directly into praise or blame of any individual's actions or character. Arguing that his theory measures moral reasoning and not particular moral conclusions, Kohlberg insists that the *form and structure* of moral arguments is independent of the *content* of those arguments, a position he calls "formalism".

Kohlberg's theory centers on the notion that justice is the essential characteristic of moral reasoning. Justice itself relies heavily upon the notion of sound reasoning based on principles. Despite being a justice-centered theory of morality, Kohlberg considered it to be compatible with plausible formulations of deontology and eudaimonia.

Kohlberg's theory understands values as a critical component of the right. Whatever the right is, for Kohlberg, it must be universally valid across societies (a position known as "moral universalism"); there can be no relativism. Moreover, morals are not natural features of the world; they are prescriptive. Nevertheless, moral judgments can be evaluated in logical terms of truth and falsity.

According to Kohlberg, someone progressing to a higher stage of moral reasoning cannot skip stages. For example, an individual cannot jump from being concerned mostly with peer judgments (stage three) to being a proponent of social contracts (stage five). On encountering a moral dilemma and finding their current level of moral reasoning unsatisfactory, however, an individual will look to the next level.

Realizing the limitations of the current stage of thinking is the driving force behind moral development, as each progressive stage is more adequate than the last. The process is therefore considered to be constructive, as it is initiated by the conscious construction of the individual, and is not in any meaningful sense a component of the individual's innate dispositions, or a result of past inductions.

Formal Elements

	View of Persons	Social Perspective Lvl
6	Sees how human fallibility and frailty are impacted by communication	Mutual respect as a universal principle
5	Recognize that contracts will allow persons to increase welfare of both	Contractual perspective
4	Able to see abstract normative systems	Social systems perspective
3	Recognize good and bad intentions	Social relationships perspective
2	Sees that a) others have goals and preferences, b) either conform to or deviate from norms	Instrumental egoism
1	No VOP: only self & norm are recognized	Blind egoism

Progress through Kohlberg's stages happens as a result of the individual's increasing competence, both psychologically and in balancing conflicting social-value claims. The process of resolving conflicting claims to reach an equilibrium is called "justice operation." Kohlberg identifies two of these justice operations: "equality," which involves an impartial regard for persons, and "reciprocity," which means a regard for the role of personal merit. For Kohlberg, the most adequate result of both operations is "reversibility," in which a moral or dutiful act within a particular situation is evaluated in terms of whether or not the act would be satisfactory even if particular persons were to switch roles within that situation (also known colloquially as "moral musical chairs").

Knowledge and learning contribute to moral development. Specifically important are the individual's "view of persons" and their "social perspective level", each of which becomes more complex and mature with each advancing stage. The "view of persons" can be understood as the individual's grasp of the psychology of other persons; it may be pictured as a spectrum, with stage one having no view of other persons at all, and stage six being entirely socio-centric. Similarly, the social perspective level involves the understanding of the social universe, differing from the view of persons in that it involves an appreciation of social norms.

Examples of Applied Moral Dilemmas

Kohlberg established the *Moral Judgement Interview* in his original 1958 dissertation. During the roughly 45-minute tape recorded semi-structured interview, the interviewer uses moral dilemmas to determine which stage of moral reasoning a person uses. The dilemmas are fictional short stories that describe situations in which a person has to make a moral decision. The participant is asked a systemic series of open-ended questions, like what they think the right course of action is, as well as justifications as to why certain actions are right or wrong. The form and structure of these replies are scored and not the content; over a set of multiple moral dilemmas an overall score is derived.

Heinz Dilemma

A dilemma that Kohlberg used in his original research was the druggist's dilemma: *Heinz Steals the Drug In Europe*. From a theoretical point of view, it is not important what the participant thinks that Heinz should *do*. Kohlberg's theory holds that the justification the participant offers is what is significant, the *form* of their response. Below are some of many examples of possible arguments that belong to the six stages:

Stage One (*obedience*): Heinz should not steal the medicine because he would consequently be put in prison, which would mean he is a bad person. Or: Heinz should steal the medicine because it is only worth $200, not how much the druggist wanted for it. Heinz had even offered to pay for it and was not stealing anything else.

Stage Two (*self-interest*): Heinz should steal the medicine because he will be much happier if he saves his wife, even if he will have to serve a prison sentence. Or: Heinz should not steal the medicine because prison is an awful place, and he would probably experience anguish over a jail cell more than his wife's death.

Stage Three (*conformity*): Heinz should steal the medicine because his wife expects it; he wants to be a good husband. Or: Heinz should not steal the drug because stealing is bad and he is not a criminal; he tried to do everything he could without breaking the law, you cannot blame him.

Stage Four (*law-and-order*): Heinz should not steal the medicine because the law prohibits stealing, making it illegal. Or: Heinz should steal the drug for his wife but also take the prescribed punishment for the crime as well as paying the druggist what he is owed. Criminals cannot just run around without regard for the law; actions have consequences.

Stage Five (*human rights*): Heinz should steal the medicine because everyone has a right to choose life, regardless of the law. Or: Heinz should not steal the medicine because the scientist has a right to fair compensation. Even if his wife is sick, it does not make his actions right.

Stage Six (*universal human ethics*): Heinz should steal the medicine, because saving a human life is a more fundamental value than the property rights of another person. Or: Heinz should not steal the medicine, because others may need the medicine just as badly, and their lives are equally significant.

Criticisms

One criticism of Kohlberg's theory is that it emphasizes justice to the exclusion of other values, and so may not adequately address the arguments of those who value other moral aspects of actions. Carol Gilligan has argued that Kohlberg's theory is overly androcentric. Kohlberg's theory was initially developed based on empirical research using only male participants; Gilligan argued that it did not adequately describe the concerns of women. Although research has generally found no significant pattern of differences in moral development between sexes, Gilligan's theory of moral development does not focus on the value of justice. She developed an alternative theory of moral reasoning based on the ethics of caring. Critics such as Christina Hoff Sommers, however, argued that Gilligan's research is ill-founded, and that no evidence exists to support her conclusion.

Kohlberg's stages are not culturally neutral, as demonstrated by its application to a number of different cultures. Although they progress through the stages in the same order, individuals in different cultures seem to do so at different rates. Kohlberg has responded by saying that although different cultures do indeed inculcate different beliefs, his stages correspond to underlying modes of reasoning, rather than To those beliefs.

Other psychologists have questioned the assumption that moral action is primarily a result of formal reasoning. Social intuitionists such as Jonathan Haidt, for example, argue that individuals often make moral judgments without weighing concerns such as fairness, law, human rights, or abstract ethical values. Thus the arguments analyzed by Kohlberg and other rationalist psychologists could be considered *post hoc* rationalizations of intuitive decisions; moral reasoning may be less relevant to moral action than Kohlberg's theory suggests.

Continued Relevance

Kohlberg's body of work on the stages of moral development has been utilized by others working in the field. One example is the *Defining Issues Test* (*DIT*) created in 1979 by James Rest, originally as a pencil-and-paper alternative to the Moral Judgement Interview. Heavily influenced by the six-stage model, it made efforts to improve the validity criteria by using a quantitative test, the Likert scale, to rate moral dilemmas similar to Kohlberg's. It also used a large body of Kohlbergian theory such as the idea of "post-conventional thinking." In 1999 the *DIT* was revised as the *DIT-2*; the test continues to be used in many areas where moral testing is required, such as divinity, politics, and medicine.

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CHAPTER 6

Dewey and Experiential Learning

INTRODUCTION

John Dewey (1859-1952) was born in Burlington, Vermont on October 20, 1859. All of his mother's brothers were college graduates, and because of her upbringing she was a firm believer that her sons must complete their schooling though to the college level. She was adamant about all of her sons being right with God and getting their education. John and his brothers attended public schools in Vermont. He attended the University of Vermont for four years along with his brothers. At the university, Dewey read the works of Charles Darwin which had a great influence in Dewey's life works. He graduated from college in 1879 with a major in philosophy. In September 1882, Dewey enrolled at the Johns Hopkins University. At the university he studied under George Sylvester Morris, who taught philosophy, and Granville Stanley Hall, who taught psychology. He received doctorate shortly after he delivered his paper in 1884 and took a faculty position at the University of Michigan. There he taught psychology classes. The fall of 1889, John went back to Michigan to be the head in the philosophy department. Dewey taught there until 1894 (Coughlan, 1975).

John Dewey's philosophical view throughout his career was on the "theory of inquiry" on how species survived in their environment. Dewey believed in Charles Darwin's theory of nature selection, adopting the naturalistic approach of Darwin. He thought that a living organism interacting with the environment responds by developing an understanding of how to adapt to that situation and excel. One of Dewey's most outstanding essays was the "Reflex Arc Concept in Psychology" in 1869. In this paper he treated the stimulus separate from the response. This would be later known as social behaviorism. The reflex arc combines the sensory stimulus, central connection, and the motor response as working together as one. He claimed that a person had to experience a set of circumstances and the reflex arc works simultaneously. A person focus on something, then decides what to do, and the acts on the decision. Dewey argued that how we acted in the environment is how we learn.

Dewey put to use some of his ideas of learning in the Dewey School at the University of Chicago. The scientifically tested curriculum was centered on the student. Dewey wanted the students to learn from hands on experience. Dewey believed that education was a life- long process and that philosophy was everyday life. He believed that psychology was the basis for learning and the way to obtain a good education. In the Dewey school the teachers were to present real life problems to the children and then guide the students to solve the problem by providing them with a hands-on activity to learn the solution. The child's decision was to be based on the experience the child had in school (Herbert & McNergney, 1998). The History of the University of Chicago Laboratory School's web site gives some of the curriculum that Dewey had for his students. The child's home environment should be centered in the school. Cooking and sewing was to be taught at school and be a routine. Reading, writing, and math was to be taught in the daily course of these routines. Building, cooking, and sewing had these schooling components in it and these activities also represented everyday life for the students. The students had to measure things and be able to read to do these things. For an example, if a student was not able to read it was here how they would be taught to achieve the ability to read. The child would experience school as being in a community. This would help the child learn how to share and communicate with others. Problems would be presented to the child and by trial and error the child would be able to solve the problem. The teacher's responsibility was to be aware of where each child was intellectually and

provide appropriate problems for the child to solve. Dewey wrote a book about his findings from the Dewey school called *School and Society*.

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Experiential learning is a cyclical process that capitalizes on the participants' experiences for acquisition of knowledge. This process involves setting goals, thinking, planning, experimentation, reflection, observation, and review. By engaging in these activities, learners construct meaning in a way unique to themselves, incorporating the cognitive, emotional, and physical aspects of learning.

> "Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand" (Confucius circa 450 BC).

The Theory

Experiential Learning Theory "provides a holistic model of the learning process and a multi-linear model of adult development" (Baker, Jensen, & Kolb, 2002, p. 51). In other words, this is an inclusive model of adult learning that intends to explain the complexities of and differences between adult learners within a single framework. The focus of this theory is experience, which serves as the main driving force in learning, as knowledge is constructed through the transformative reflection on one's experience (Baker, Jensen, & Kolb, 2002).

The learning model outlined by the Experiential Learning Theory (ELT) contains two distinct modes of gaining experience that are related to each other on a continuum: concrete experience (apprehension) and abstract conceptualization (comprehension). In addition, there are also two distinct modes of transforming the experience so that learning is achieved: reflective observation (intension) and active experimentation (extension) (Baker, Jensen, & Kolb, 2002). When these four modes are viewed together, they constitute a four-stage learning cycle that learners go through during the experiential learning process. The learners begin with a concrete experience, which then leads them to observe and reflect on their experience. After this period of reflective observation, the learners then piece their thoughts together to create abstract concepts about what occurred, which will serve as guides for future actions. With these guides in place, the learners actively test what they have constructed leading to new experiences and the renewing of the learning cycle (Baker, Jensen, & Kolb).

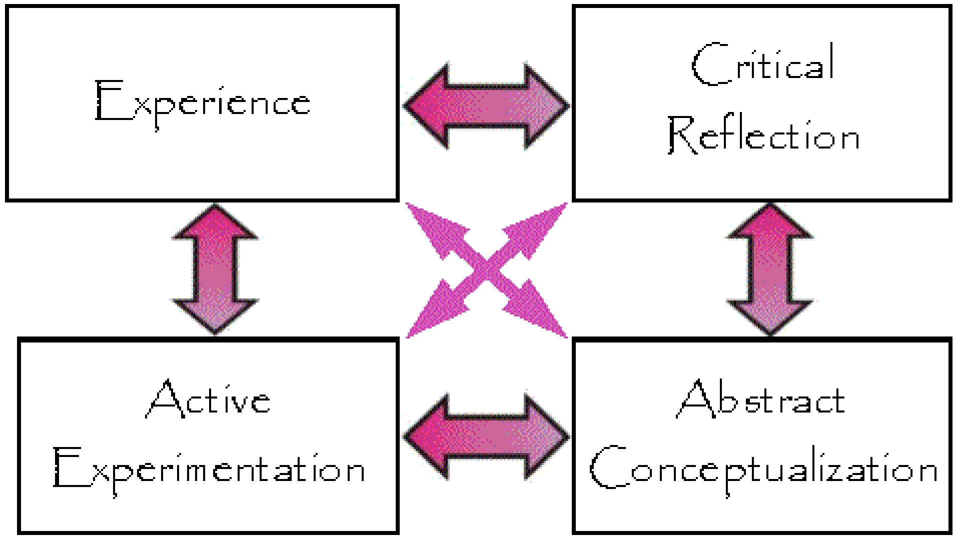


Figure 1. *The graphic above is a representation of the Experiential Learning Cycle, which includes the components of experience, critical reflection, abstract conceptualization, active experimentation, and more critical reflection. Real experiences help the individual learn advanced abstract concepts. The experiences might result in paths, which allow the individual to actively collect information to learn and become a member of the community of practice. Perhaps critical thinking and reflection may refine ideas or lead the individual to consider alternate possibilities. Each phase potentially leads to another and builds upon the former. By Frank LaBanca (2008).*

The ELT model for learning can be viewed as a cycle consisting of two distinct continuums, apprehension-comprehension and intension-extension. However, these dialectical entities must be integrated in order for learning to occur. Apprehension-comprehension involves the perception of experience, while intension-extension involves the transformation of the experience. One without the other is not an effective means for acquiring knowledge (Baker, Jensen, & Kolb, 2002). Another way to view this idea is summarized as follows, "perception alone is not sufficient for learning; something must be done with it" and "transformation alone cannot represent learning, for there must be something to be transformed" (Baker, Jensen, & Kolb, 2002, p. 56-67).

The ELT model attempts to explain why learners approach learning experiences in such different manners but are still able to flourish. Indeed, some individuals develop greater proficiencies in some areas of learning when compared to others (Laschinger, 1990). The ELT model shows that during the learning process, learners must continually choose which abilities to use in a given learning situation and resolve learning abilities that are on opposite ends of a continuum (Baker, Jensen, & Kolb, 2002). Indeed, learners approach the tasks of grasping experience and transforming experience from different points within a continuum of approaches. However, it is important that they also resolve the discomfort with the opposite approach on the continuum in order for effective learning to occur. Thus, if a learner is more comfortable perceiving new information in a concrete manner and actively experimenting during the processing of the experience, the learner must also undergo some abstract conceptualization and reflective observation in order to complete the cycle and lead to effective learning. Thus, a learner

who experiments with models and manipulates them in the process of learning must also be able to conceptualize and form observations based on what s/he experiences. This must occur, even if the learners do not consider themselves strong in these areas (Baker, Jensen, & Kolb, 2002). This is at the heart of the ELT model and Kolb's view of the adult learner.

Applications

There are currently many applications of Experiential Learning Theory within educational systems, especially on college campuses. These examples include field courses, study abroad, and mentor-based internships (Millenbah, Campa, & Winterstein, 2004). Additional examples of well-established experiential learning applications include cooperative education, internships and service learning. There are also numerous examples of computer-based interventions based on experience.

Cooperative Education, Internships and Service Learning
(*by Tamara Pinkas, Cooperative Education Coordinator, Lane Community College, Eugene, Oregon*)

Cooperative Education (co-op) is a structured educational strategy integrating classroom studies with work-based learning related to a student's academic or career goals. It provides field-based experiences that integrate theory and practice. Co-Op is a partnership among students, educational institutions, and work sites which include business, government, and non-profit community organizations. Students typically earn credit and a grade for their co-op experience while working in a paid or unpaid capacity. College and university professional and career-technical programs such as engineering, media arts and business often require cooperative education courses for their degrees. The National Commission for Cooperative Education (http://www.co-op.edu/) supports the development of quality work-integrated learning programs.

Closely related to cooperative education are internships. An internship is typically a temporary position, which may be paid or unpaid, with an emphasis on on-the-job training, making it similar to an apprenticeship. Interns are usually college or university students, but they can also be high school students or post graduate adults seeking skills for a new career. Student internships provide opportunities for students to gain experience in their field, determine if they have an interest in a particular career, create a network of contacts, and, in some circumstances, gain school credit (this definition of an internship is adapted from Wikipedia http://en.wikipedia.org/wiki/Intern).

Service learning is a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities with the emphasis on meeting community needs. Because of its connection to content acquisition and student development, service-learning is often linked to school and college courses. Service-learning can also be organized and offered by community organizations. Learn and Serve America (http://www.servicelearning.org/) supports the service-learning community in education, community-based initiatives and tribal programs, as well as all others interested in strengthening schools and communities using service-learning techniques and methodologies.

Field Course Scenario

A university offers a field-based campus course in wildlife and research management that requires students to actively participate in activities other than those normally encountered during a lecture or recitation section of class. These students are introduced to various vegetation sampling techniques in

the one-hour lecture period, but application and use of the techniques occurs when students must describe the vegetation's structural differences between two woodlots on campus.

Students are provided with a general goal statement requiring them to differentiate between the two areas based on structure but are not told how to determine these differences or how detailed the description of structure must be (e.g., vertical cover or vertical cover broken out by height strata). Students must first determine the objectives of the project before proceeding. Once these have been agreed on with all members of the group, methods for collecting the data are determined. Students may work with others in the class or with the instructor to determine the most appropriate sampling design. After selecting an appropriate sampling design, students are required to collect the data, and thus learn about the technique(s) through experience with it (concrete experience). By doing so, students learn how to use the technique and are able to more readily decide if the technique is suitable under different sampling regimes (reflection and generalization).

During this process, students gain a broader understanding of the technique and its applicability; much of this may never be addressed or presented in a classroom setting. Based on the prerequisites for the course, the instructor worked from the assumption that students have an understanding of ecological concepts and basic statistics. Having these prerequisites facilitates students putting the techniques to use in the environment being studied. An additional benefit of allowing students to experiment with techniques is that unexpected events may occur e.g., it rains halfway through sampling. These unstructured events can further increase a student's confidence, excitement, and familiarity with a technique requiring the student to make decisions about how to proceed or when to stop (active experimentation). These types of events are difficult to model in a classroom, and even if possible, many students do not know how to deal with unexpected circumstances when their only training has been through discussion. Feeling adequately trained to handle these circumstances will require students to have firsthand knowledge and experience with real-world situations.

Another popular use of experiential learning which has been around for a long time is role play. It has been used for educational and training purposes, for military strategic and tactical analysis and simply as games. We role play in childhood - imitating our parents, playing with dolls and cars, building sand castles and pretending we are princes and warriors-with the result that learning takes place, preparing us for life .

Role Play Scenario

The subject of this lesson is a controversy that has deep roots in American History, the Constitution and the Bill of Rights. Using the PBS documentary video In The Light Of Reverence, the teacher has the students closely examine the struggles of the Lakota Sioux to maintain their sacred site at Mato Tipila (Lakota for Bear's Lodge) at Devils Rock in Wyoming. Although the site at Devil's Rock was never ceded by treaty to the U.S. government, it is now under the administration of the National Park Service. Rock climbers claim any U.S. citizen should have complete access to the site because it is on federal land. In deference to the religious practices of the Lakota, the National Park Service asks that people do not climb there during the entire month of June. The case has been litigated up to the Supreme Court.

After watching the video and discussing various aspects of the controversy, students role-play members of four teams: the Lakota, rock climbers, National Park Service and the courts. Using extensive online resources linked to the lesson, students research the issues and evaluate the sources. The first three teams present their demands in a hearing. The court tries to help them reach a compromise and then

adjudicates any unresolved issues. The lesson continues as students compare the plight of the Lakota to that of the Hopi and Wintu, (as presented in the video) who also struggle to maintain their sacred lands. The students will understand the concept of "rights in conflict" arising under the First Amendment (freedom of religion), interpret a current conflict from multiple perspectives, learn to advocate for a point of view, and learn to resolve a conflict through a conflict resolution scenario.

Steps to Integrating Experiential Learning in the Classroom

1. Set up the experience by introducing learners to the topic and covering basic material that the learner must know beforehand (the video scenario as well as discussion).
2. Engage the learner in a realistic experience that provides intrigue as well as depth of involvement (mock trial).
3. Allow for discussion of the experience including the happenings that occurred and how the individuals involved felt (discussion afterwards).
4. The learner will then begin to formulate concepts and hypotheses concerning the experience through discussion as well as individual reflection (discussion afterwards, but also could be done with journaling).
5. Allow the learners to experiment with their newly formed concepts and experiences (interpreting current conflict and conflict resolution scenario).
6. Further reflection on experimentation (discussion, but could also be done through journaling).

Simulations and gaming within instruction also involve direct experience and thus are valid examples of experiential learning. Within game interactions, there are often several cycles presented to the participant. These cycles generally consist of participation by the user, decision making, and a period of analysis. This process coincides greatly with the Experiential Learning Cycle outlined above (Marcus, 1997). In addition, it has been found that simulations which shorten the debriefing period at the end of the game session can diminish their own effectiveness. This means that games which do not allow for appropriate reflection are not as effective as if proper reflection occurs. Thus, it is apparent that the reflective observation and abstract conceptualization portions of simulations and games are vital to learning, which has also been established by the Experiential Learning Theory (Ulrich, 1997).

Yet another application of experiential learning is in the field of e-learning. Specifically, there has been an effort to utilize this model to increase the effectiveness of Continuing Professional Development (CPD) e-learning courses. It was found that many of these courses did not allow for concrete experience and active experimentation due to the fact that the learning processes were based on more traditional learning methods and not capitalizing on the self-directed nature of the learners (Friedman, Watts, Croston, & Durkin, 2002). However, with the use of different technologies such as multimedia resources, web-based discussions, online planners, and creative tasks, e-learning courses could be improved in a manner that would strengthen the entire experiential learning cycle for the learner (Frank, Reich, & Humphreys, 2003).

Weaknesses/Criticisms

Since Kolb created the Experiential Learning Theory and the accompanying learning model, his work has been met with various criticisms about its worth and effectiveness. One of the criticisms of this model is that the concrete experience part of the learning cycle is not appropriately explained in the theory and remains largely unexplored. Herron (as cited in Yorks & Kasl, 2002, p. 180-81) believes that "the notion of feeling is nowhere defined or elaborated, thus concrete experience is not properly explored. The

model is really about reflective observation, abstract conceptualization, and active experimentation." Another common criticism of the theory that exposes a weakness is that the idea of immediate and concrete experience is problematic and unrealistic (Miettinen, 2000).

Other criticisms of the ELT are that the concepts outlined by Kolb are too ill-defined and open to various interpretations and that the ideas he presents are an eclectic blend of ideas from various theorists that do not fit logically together. Another, perhaps more biting criticism of Kolb's work is that his ELT model is only an attempt to explain the societal benefit of his Learning Styles Inventory and thus may actually be a well derived marketing ploy (Miettinen, 2000). Also, it is believed that the phases in the ELT learning model remain separate and do not connect to each other in any manner (Miettinen).

However, the most tangible weaknesses of the ELT and the ELT learning model are the vast differences between it and the ideas established by John Dewey, whose beliefs are largely attributed to the establishment of the ELT. Dewey believed that non-reflective experience borne out of habit was the dominant form of experience and that reflective experience only occurred when there were contradictions of the habitual experience. But, in a glaring weakness of the ELT, Kolb does not adequately discuss the role of non-reflective experience in the process of learning (Miettinen, 2000). In addition, Dewey believed that observations of reality and nature were the starting point of knowledge acquisition. Kolb, however, believes that the experience is the starting point of knowledge acquisition and disregards the observations concerning the subjective reality of the learner, another blatant weakness (Miettinen). A final weakness in the ELT that was noticed is its lack of discussion concerning the social aspect of experience. The ELT learning model focused on the learning process for a single learner and failed to mention how the individual fit into a social group during this process and what role this group may play. Also, there was no discussion on how a social group may gain knowledge through a common experience.

Strengths

With all of the criticisms of the Experiential Learning Theory, it may be too easy to overlook its merits in the field of adult education. Each adult has his/her own unique set of experiences and set of learning abilities that he/she feels comfortable utilizing. Kolb's theory accounts for this fact and shows how the learner can utilize his/her experiences and learning strengths in the process of constructing knowledge. Kolb also did a good job of integrating the two dialectical entities into the model to create a complete learning cycle in which the entire learning process can be traced. In addition, Kolb did a great job of showing how the learner can be effective utilizing his/her learning strengths, while at the same time using skills that are underdeveloped to complete the learning cycle.

However, due to the weaknesses of the ELT model as created by Kolb, it is necessary to construct another model, which includes Kolb's beliefs and at the same time confronts the weaknesses that have been found. Below is a representation of a model that could be used for this purpose. The idea behind this model was to include the observations of the learners' own subjective reality as a starting point for experience. Then, a disruptive experience occurs, which challenges the habitual patterns of the learner. Once the experience has been encountered learners enter a stage of emotion inventory in which they become cognizant of their emotions in reaction to the experience. These emotions then play a role in the next step, which is a stage of reflective observation similar to that outlined by Kolb in his model. After this stage, learners enter a stage of conceptualization and hypothesis formation in which they attempt to piece the information gathered thus far concerning the experience into logical chunks. Once this occurs, learners address the experience in some manner. This may include active experimentation

to test a hypothesis. Or, it may also include higher order planning which requires even more in-depth examination of the experience. This stage can lead to two different types of experiences, expected and disruptive, both of which lead to repetition of the learning cycle. The expected experiences include those which can be predicted by the concepts and hypothesis that were established in the learning cycle. Disruptive experiences, on the other hand, include those that conflict with the concepts that were formulated in the experiential process. It is also readily evident in the model that the experiential learning cycle can occur individually or within a social group.

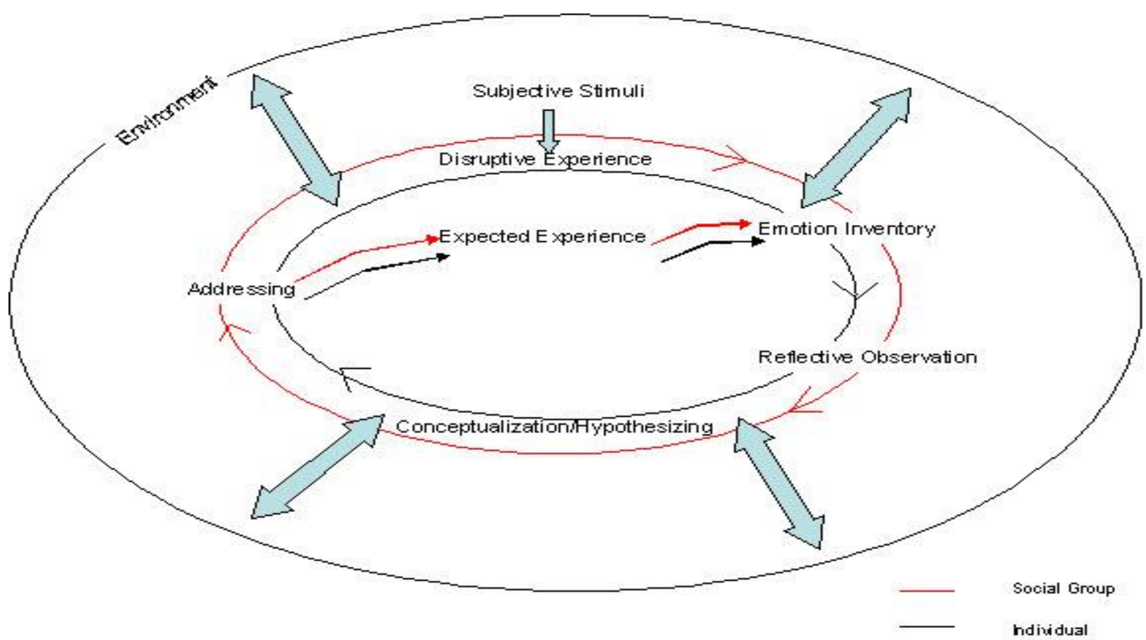


Figure 2. *The graphic above depicts the revised experiential learning cycle. It includes the encompassing circle of the environment as well as cycle of events in the learning process that can occur individually or in a group. The different elements are explained below in the order that they appear on the cycle.*

Performed Individually

- Subjective Stimuli: Observations about an individual's surrounding environment and nature made by the individual, as well as more affective and temporal judgments about things not really seen but that are definitely felt. It is possible that individuals can learn from this activity and not enter the cycle depicted below.

Can Occur Individually or In a Social Group

- Disruptive Experience: Experience that is a disruption of the habitual manner in which an individual experiences things. This is in contrast to a non-reflective experience borne out of habit.
- Emotion Inventory: Inventory of emotions that are created by the disruptive experience.
- Reflective Observation: Observations concerning the experience and reflection upon the event including causes, possible effects, etc.

- Conceptualization/Hypothesizing: Further processing of the experience; creating concepts to explain the experience and construction of explanatory hypotheses.
- Addressing: The concepts and hypotheses that have been constructed are formulated and the experience is addressed in some manner. There is an attempt to predict future experience. This may involve planning, active experimentation, or cautious testing.

The encompassing circle of the environment depicts how all of the activities take place in the context of a certain environment and are affected somehow by the environment.

Experiential Learning Theory outlines the manner in which learners gain knowledge and understanding through experiences. Though some may debate which steps are present in experiential learning, there is no debate about the worth of experience in learning. Through experience, learners are able to construct firsthand a sense of understanding of the events going on around them. Educators have begun to harness the power of experience in study abroad courses, field studies, role plays, and numerous computer-based interventions. The future could bring even more applications of this theory, a possibility as exciting for the learner as much as it is the facilitator.

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CHAPTER 7

Bronfenbrenner's Bio-Ecological Model of Development

INTRODUCTION

Urie Bronfenbrenner (1917-). A Russian American psychologist, Urie Bronfenbrenner was born on April 29, 1917 to Dr. Alexander Bronfenbrenner and Kamenetski Bronfenbrenner. At the age of his 6, his family relocated to United States. For a short period of time, they settled at Letchworth village in Pittsburgh where his father worked as a research director and clinical psychologist. Bronfenbrenner attended Cornell University after his graduation from Haverstraw High School. In 1938, he completed his double major in psychology and music. After that he completed his M.A at Harvard University. In 1942, he completed his Ph.D. from the University of Michigan. Shortly after that, he was hired as a psychologist in the army doing many assignments for the Office of Strategic Services and the Army Air Corps. In the administration and research, he worked as an assistant chief psychologist before he accepted the offer from the University of Michigan to work as an assistant professor in Psychology. In 1948, he accepted an offer from Cornell University as a professor in Human development, family studies and psychology. He also served as a faculty member in the Board of Trustees in the late 1960's and 1970's. Urie is admired all over the world to develop the innate relationship between research and policy on child development. He holds the view that child development is better applicable when institutional policies motivate studies in a natural environment and theory is best suited in a practical application when it is relevant.

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Source: Integrated Ecological Systems and Framework. (n.d.). Retrieved from
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Integrated Ecological Systems Framework

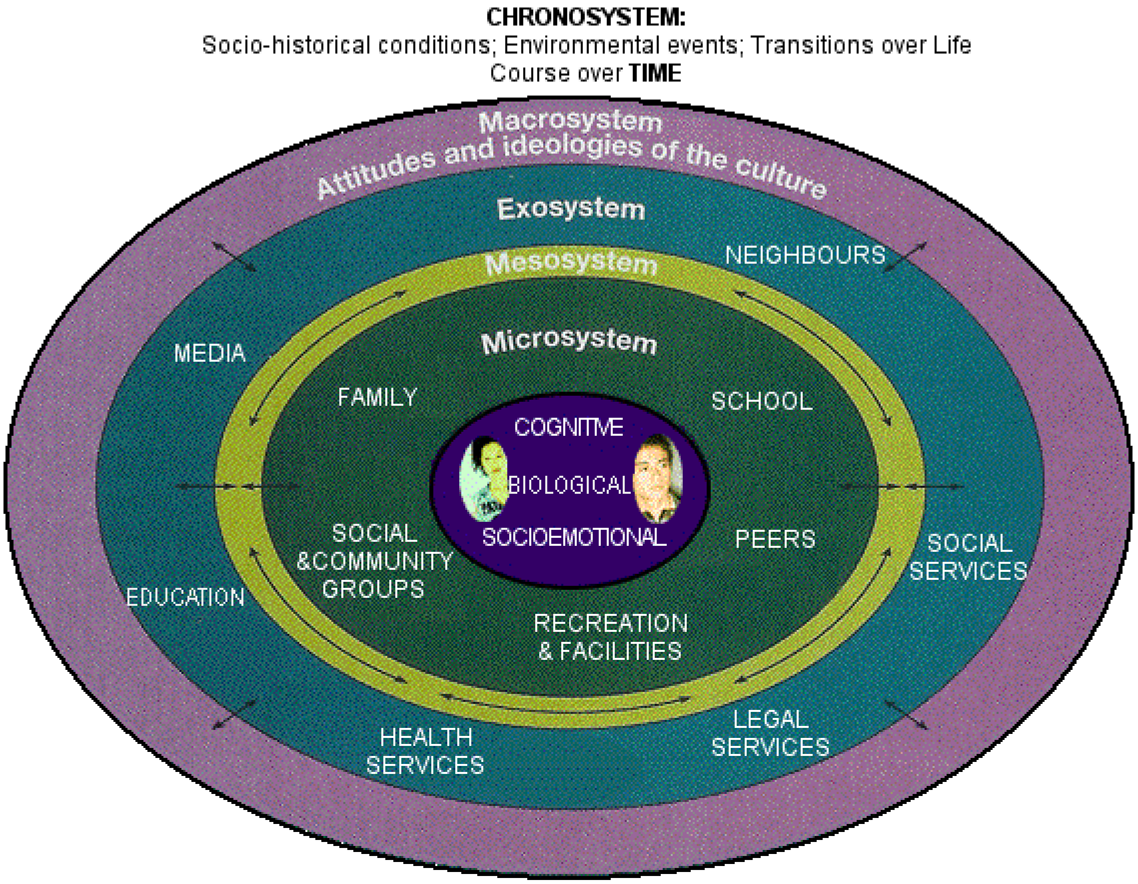
An Integrated Ecological Systems Approach to Understanding & Exploring the Complexities of Human Development, Learning, and Education

This Integrated framework is my attempt to construct a conceptual framework for organizing learning about the diverse range of issues and topics studied in a teacher education program. As seen in the following visual, the model combines the Ecological Theory of Human Development [see Bronfenbrenner] and the Three Domains of Human Development. The framework describes the complex interplay between the individual [center] – with all of his or her unique biological, socio-emotional, and cognitive attributes- and the varied social contexts within which the individual develops. These social contexts comprise four nested systems - chronosystem, macrosystem, exosystem, microsystem -that range from close interpersonal interactions to broad-based influences of culture and each system contains roles, norms, and rules that can powerfully shape development.

These themes of environment, social interactions, socio-emotional, physical and cognitive development are key areas studied in educational psychology particularly as they relate to understanding how individuals learn, individual variation, and the implications for instructional practice.

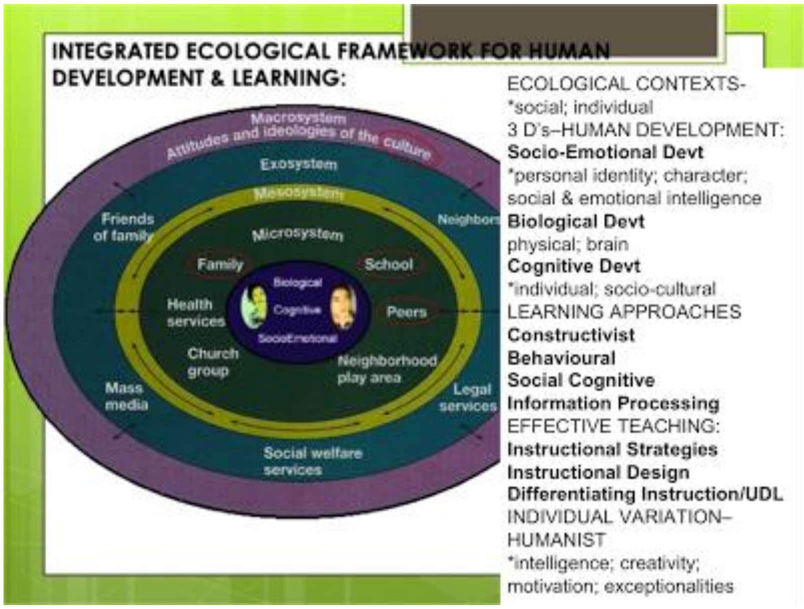
Integrated Ecological Systems Framework

This integrated framework serves to remind us that we as educators do not teach merely content to our students but rather the 'whole' child - with his or her own unique set of abilities and characteristics- within a varied complex social system. As such, we play an integral role in the formation of the youth we interact with and are ultimately charged with the responsibility of supporting and ensuring their optimal growth and development.



Integrated Framework: Bronfenbrenner's Ecological Theory of Human Development & 3 Domains of Human Development Anita Zijdemans Boudreau 2009

For studies in Educational Psychology, this integrated model can serve as a visual organizer for both summarizing and unpacking key concepts and themes related to personal development, learning and educational practice. As we strive to become evidence-based practitioners, the goal is to understand the theoretical and research foundations that inform our work in supporting our students' well-being and learning.

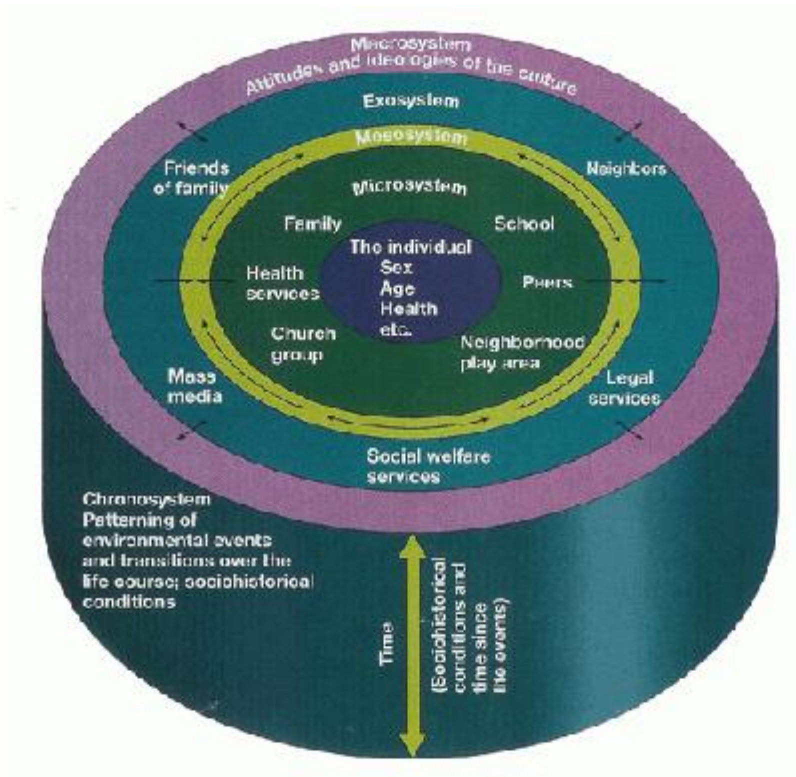


THEORETICAL ORIGINS



The Ecological Theory of Human Development:

The Ecological Theory of Human Development was pioneered by Urie Bronfenbrenner, a Russian-born psychologist who developed an interest in developing theory and research methods that looked at patterns of development across time as well as the interactions between the development of the child and the environment. This also included a study of the social and political policies and practices affecting children and families.



Source: Santrock J. W. (2005) *Educational Psychology*

The model describes the complex interplay between the individual - at the center-and the social contexts within which the individual develops. These social contexts comprise five systems that range from close interpersonal interactions to broad-based influences of culture and each system contains roles, norms, and rules that can powerfully shape development:

Microsystem: the setting in which the individual spends considerable time - e.g. in direct reciprocal interaction with family, peers, school and neighbourhood vs. being a passive recipient.

Mesosystem: the linkages between microsystems such as the connections between family experiences and school experiences.

Exosystem: where the individual does not have any control over what she or her experiences-e.g. a parent's workplace or school district.

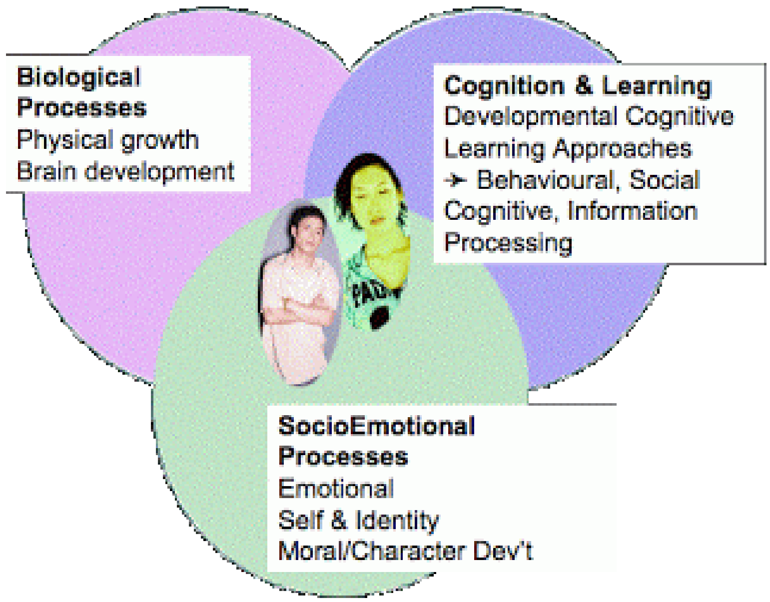
Macrosystem: the broader cultural context, e.g. the roles of ethnicity and socioeconomic factors that impact on the individual's development. Santrock (2005) states, "It is the most encompassing context in which students and teachers live, including the society's values and customs" (p71).

Chronosystem: the socio-historical conditions affecting an individual's development. Examples of today might include the pervasiveness of technology in society, the breakdown of traditional family model or the impact of urban city dwelling. See Socio Historical Context - Demographics of Diversity.

For another perspective that integrates Bronfenbrenner see also a Systems model of human

development.

A criticism of Bronfenbrenner has been that the model focuses too much on the biological and cognitive aspects of development. For this reason I superimpose a more comprehensive view of human development - the 3 domains of human development-in the center.



3 Domains of Human Development:
Developmentalists often refer to the 3 domains as overlapping circles that represent the intricately interwoven relationship between each of the following aspects of an individual's experience:

Biological Processes: the physical changes in an individual's body.

Cognitive Processes: the changes in an individual's thinking and intelligence.

Socio-Emotional Processes: the changes in an individual's relationship with other people in emotions, in personality and in the role of social contexts in development.

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CHAPTER 8

Erikson's Social-Emotional Development Stages

INTRODUCTION

Erik H. Erikson (1902-1994) was a world renowned scholar of the behavioral sciences. His contributions ranged from psychology to anthropology. Moreover, his two biographies, one of Ghandi, the other a Pulitzer-Prize study of Martin Luther, earned him distinction in literature. Curiously, however, he was not a hero in his own house. Serious students of personality theory underscored his seminal contribution: linking individual development to external forces (structured as the "Life Cycle," the stages ranging from infancy to adulthood). Rather than the negations of pathology, Erikson welcomed the affirmation of human strength, stressing always the potential of constructive societal input in personality development. Erikson's dual concepts of an (individual) ego and group identity have become an integral part of group psychology, with terms such as adolescent "identity diffusion," or adolescent "moratorium," having been mainstreamed into everyday language.

He also began teaching at Harvard's medical school, in addition to his work under Henry A. Murray at the university's Psychology Clinic. It is here, where he met Margaret Mead, Gregory Bateson, Ruth Benedict as well as Kurt Lewin. In 1936, Erikson moved to Yale University where he was attached to both the medical school and to the Yale Institute of Human Relations. His first field study of the Sioux Indians in South Dakota was launched from New Haven. The subsequent work with the Yurok Indians, commenced after he had gone to the University of California in 1939 to join Jean MacFarlane's longitudinal study of personality development. During World War II, Erikson did research for the U.S. Government, including an original study of "Submarine Psychology." In 1950, the same year in which Childhood and Society, his most steady-selling book was published, Erikson resigned from the University of California. Though not a Communist, he refused to sign the loyalty contract stating, that "...my conscience did not permit me," to collaborate with witch hunters. He returned to Harvard in the 1960s as a professor of human development and remained there until his retirement in 1970. In 1973 the National Endowment for the Humanities selected Erikson for the Jefferson Lecture, the United States' highest honor for achievement in the humanities.

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Source: Huitt, W. (2008). Socioemotional development. *Educational Psychology Interactive*. Valdosta, GA: Valdosta State University. Retrieved from http://www.edpsycinteractive.org/topics/affect/erikson.html

Erickson's Social-Emotional Development

Erik Erikson was a follower of Sigmund Freud who broke with his teacher over the fundamental point of what motivates or drives human behavior. For Freud it was biology, or more specifically, the biological instincts of life and aggression. For Erikson, who was not trained in biology and/or the medical sciences (unlike Freud and many of his contemporaries), the most important force driving human behavior and the development of personality was social interaction.

Erikson left his native Germany in the 1930's and immigrated to America where he studied Native American traditions of human development and continued his work as a psychoanalyst. His developmental theory of the *Eight Stages of Man* (Erikson, 1950) was unique in that it covered the entire lifespan rather than childhood and adolescent development.

Erikson's view is that the social environment combined with biological maturation provides each individual with a set of "crises" that must be resolved. The individual is provided with a "sensitive period" in which to successfully resolve each crisis before a new crisis is presented. The results of the resolution, whether successful or not, are carried forward to the next crisis and provide the foundation for its resolution. This is different from other theories such as Piaget's theory of cognitive development or Maslow's theory of human needs where the level must be satisfactorily addressed before one can move on to the next level.

Erikson's Theory of Socio-Emotional Development		
Stage	**Age**	**Expected Resolution**
Trust vs. Mistrust	Infancy	Child develops a belief that the environment can be counted on to meet his or her basic physiological and social needs.
Autonomy vs. Shame and Doubt	Toddlerhood	Child learns what he/she can control and develops a sense of free will and corresponding sense of regret and sorrow for inappropriate use of self-control.
Initiative vs. Guilt	Early Childhood	Child learns to begin action, to explore, to imagine as well as feeling remorse for actions.
Accomplishment/Industry vs. Inferiority	Middle Childhood/ Elementary	Child learns to do things well or correctly in comparison to a standard or to others.
Identity vs.	Adolescence	Develops a sense of self in relationship to others and to own internal thoughts and desires (Later work has shown two sub-stages: a social identity focusing on

Role Confusion		which group a person will identify with and a personal identity focusing on abilities, goals, possibilities, etc.).
Initimacy vs. Isolation	Young Adult	Develops ability to give and receive love; begins to make long-term commitment to relationships.
Generativity vs. Stagnation	Middle Adulthood	Develops interest in guiding the development of the next generation.
Ego Integrity vs. Despair	Older Adulthood	Develops a sense of acceptance of life as it was lived and the importance of the people and relationships that individual developed over the lifespan.

Bingham and Stryker (1995) suggest that the socio-emotional crises of personality development may receive different emphases for boys and girls as well as for men and women. They propose five stages of socio-emotional development for girls and women that parallels those proposed by Erikson.

Stages of Socio-Emotional Development for Girls		
Stage	**Age**	**Expected Resolution**
Developing the Hardy Personality	Through age 8	Feel in control of own life, committed to specific activities, look forward to challenge and opportunity for growth.
Forming an Identity as an Achiever	Age 9-12	Develop steady, durable core of self as person who is capable of accomplishment in a variety of areas (e.g., intellectual, physical, social, potential career).
Skill Building for Self-Esteem	Age 13-16	Feeling of being worthy, deserving, entitled to assert needs and wants; confidence in ability to cope with life.
Strategies for Self-Sufficiency (Emotional-Financial)	Age 17-22	Sense of responsibility for taking care of herself and, perhaps, a family;

		based on a sense of autonomy.
Satisfaction in Work and Love	Adulthood	Contentedness in personal accomplishments and social/personal relationships.

The basis for the foundation of the development of a hardy personality is based on the work of Suzanne Kobasa Ouellette, a professor at the City University of New York. The three C's of hardiness--control, commitment, challenge--can be developed through the acquisition of eight specific skills:

- Recognize and tolerate anxiety and act anyway.
- Separate fantasy from reality and tackle reality.
- Set goals and establish priorities.
- Project into the future and understand how today's choices affect the future.
- Discriminate and make choices consistent with goals and values.
- Set boundaries and limits.
- Ask assertively for wants and desires.
- Trust self and own perceptions.

These seem to be very similar to the outcomes of a satisfactory resolution of the first three crises proposed by Erikson. What may be different is that these are not the normal desired outcomes of infancy and early childhood for girls. Rather there may be a tendency to socialize girls to be more acquiescent and dependent, which is to their detriment in terms of further development. In any case, the two perspectives address very similar issues for infancy, toddlerhood, and early childhood.

The importance of forming an identity as an achiever during middle childhood is the same in both the Erikson and Bingham-Styker models. The difference may lie in the importance. As girls reach puberty, their attention naturally turns to relationships in ways that may be different from boys. To the extent that girls have not successfully developed a sense of accomplishment during middle and late childhood, it may be a decade or more before there is an opportunity to again tackle this issue. However, for boys, there may be more of an opportunity to address the issue of any deficiencies in a sense of accomplishment within the Eriksonian stage of identity formation.

The importance of self-esteem for girls in the adolescent years cannot be overemphasized. A study by the American Association of University Women (AAUW, 1991) showed that girls had a precipitous drop in self-esteem between elementary and high school. While boys also showed a decline it was not nearly as dramatic.

Percentage of Boys and Girls Responding Positively to the Statement "I am happy the way I am"			
	Elementary	**High School**	**Decrease**
Boys	67	46	19

White Girls	60	29	31
African-American Girls	65	58	7
Hispanic Girls	68	30	38

A major difference between the Erikson and Bingham-Stryker models occurs in the stage of early adulthood. In Erikson's model the crisis is intimacy versus isolation. In the Bingham-Stryker model the crisis is emotional and financial self-sufficiency. The difference may lie in gender expectations. Boys are expected to become self-sufficient; the male crisis is one of establishing intimacy. Girls are expected to establish relationships; the female crisis is autonomy in terms of taking care of themselves emotionally and financially. A related observation made by those studying trends in modern society (Huitt, 2007) is that everyone, both men and women, need to pay special attention to financial independence. The movement from the agricultural/industrial economy of 20th century to the information/service economy of the 21st is demanding the development of a new set of skills. Included in those skills is both a need to manage personal resources such as finances as well as develop the social and emotional skills that will allow one to work in groups and adapt to a rapidly changing environment. In this respect both Erikson and Bingham-Stryker are correct.

For Erikson, the crises of adulthood revolve around the issues of generativity and ego identity. For Bingham and Stryker, the crises revolve around the contentment one has with life in terms of accomplishment in the workplace and relationships. I believe Covey, Merrill and Merrill (1994) have best expressed the issues of adulthood with their list-to live, to love, to learn, to leave a legacy. This expresses the issues of intimacy (to love) and generativity (to leave a legacy) proposed by Erikson as well as the issues of to live (emotional, financial) and to learn (achievement in the world of work) proposed by Bingham and Stryker.

A variety of other books provide a discussion of girls' and women's development (e.g., Borysenko, 1997; Dale, 1995; see Huitt, 1997). It is vitally important that we pay special attention to what works for girls as well as for boys. This is certainly an area in need of further exploration.

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Suggestions for Encouraging Socio-Emotional Development*

The Preschool Child/Developing a Hardy Personality

1. Encourage initiative in many aspects of classroom work.

- Develop student-run projects
- Reinforce choices that students may make for themselves.
- Have a free-choice time in which a child may select an educational game or activity.
- As much as possible, avoid interrupting a child who is very involved and concentrated on what he is doing.

2. Avoid scolding or devaluating a child because he tries something on his own.

- Be flexible. Incorporate children's ideas, suggestions, and comments into class activities and discussions.
- If a child initiates an inappropriate or dangerous activity, restructure his efforts within acceptable limits rather than completely squelching his ideas.

3. Encourage make-believe with a wide variety of roles.

- Play pretend games focusing on roles children are already familiar with.
- During these games have children switch roles so that all children are given a chance to lead.

Elementary School/
Achievement and Peer Relationships

1. Make sure that each child has a chance experience success.

- Provide tasks and assignments on student's level of difficulty.
- Provide opportunity for child to engage in activities that match their temperaments, learning styles, abilities, etc.

2. Provide students with opportunities to set and work toward realistic goals.

- Provide many relatively short projects that offer true gains.
- Allow student involvement in choice of projects.

3. Let students have a chance to show their independence and responsibility.

- Show tolerance for student mistakes.
- Give students opportunities to participate in classroom duties.

4. Know something about the friendship structure of your classroom and try to find ways to encourage isolates to get involved.

- Give isolates responsibilities that they can handle.
- Help students learn game skills needed to take part in peer activities.

5. Give students a chance to think about fairness and justice.

- Use the Golden Rule as a basis for discussions of conflict. ("How would you feel if someone did that to you?")
- Discuss class rules as a group.
- Give students a clear statement of class rules and their rationale.

6. Provide encouragement to students who seem discouraged.

- Use individual contracts and charts that show student's progress.
- Recognize students for their accomplishments.

Encouraging Identity Formation and Development of Self-Esteem

1. Give students many models for career choices and other adult roles.

- Provide models from literature and history.
- Invite guest speakers to share their occupations.

2. Encourage students to develop interest in many activities.

- Provide a variety of extra-curricular clubs and activities.
- Encourage worthwhile hobbies.

3. Help students find assistance in working out personal problems.

- Provide school counseling services.
- Refer students to outside services when necessary.

4. Give students a chance to examine some of the choices they must make.

- Choose lessons which center on career choices.
- Provide units on changing family life.

5. Check to see if the textbooks and other materials you are using are presenting an honest view of the options open to both females and males and make adjustments when necessary.

- Are both males and females portrayed in traditional and nontraditional roles at work, at leisure, and at home?
- What effects are the materials likely to have on the self-images and aspirations of the female students? of the male students?
- Discuss your findings with the students and ask them to help you find similar biases in other materials.
- Locate additional materials to fill gaps noticed in the regular materials.

6. Watch for any unintended biases in your own classroom practices.

- Do you group students by gender for certain activities?
- Do you tend to call on one gender or the other for certain answers (boys for math and girls for poetry, for example?)

7. Look for ways in which your school may be limiting the options open to male or female students.

- What advice is given by guidance counselors to students in course selection and career decisions?
- Is there a good sports program for both boys and girls?

8. Give students realistic feedback about themselves.

- Point out how students' behavior produces certain consequences.
- In addition to grading, comment on the strengths and weaknesses in their work.

* Adapted from: Woolfolk & McCune-Nicolich. (1984). *Educational psychology for teachers* (2nd Ed.). Englewood Cliffs, NJ: Prentice-Hall, Inc.

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CHAPTER 9

Gardner and Multiple Intelligences Theory

INTRODUCTION

Howard Gardner (1943-) the John H. and Elisabeth A. Hobbs Professor of Cognition and Education at the Harvard Graduate School of Education. He also holds positions as Adjunct Professor of Psychology at Harvard University and Senior Director of Harvard Project Zero. Among numerous honors, Gardner received a MacArthur Prize Fellowship in 1981 and the University of Louisville's Grawemeyer Award in Education in 2000. He has received honorary degrees from twenty-nine colleges and universities, including institutions in Bulgaria, Chile, Greece, Ireland, Israel, Italy, South Korea and Spain. He has twice been selected by Foreign Policy and Prospect magazines as one of the 100 most influential public intellectuals in the world. In 2011, Gardner received the Prince of Asturias Award for Social Sciences. Gardner is best known in educational for his theory of multiple intelligences, a critique of the notion that there exists but a single human intelligence that can be adequately assessed by standard psychometric instruments.

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Multiple Intelligences

Introduction

Various theories on learning have been developed with increasing frequency in the last few decades. In order to understand the relationship between these theories, Curry's onion model (Curry, 1983) was developed with four layers -- personality learning theories, information processing theories, social learning theories, and multidimensional and instructional theories.

Personality learning theories define the influences of basic personality on preferences to acquiring and integrating information. Models used in this theory include Myers-Briggs Type Indicator, which measures personality in dichotomous terms- extroversion versus introversion, sensing versus intuition, thinking versus feeling, and judging versus perception, and the Keirsey Temperament Sorter, which classifies people as rationals, idealists, artisans, or guardians.

Information processing theories encompass individuals' preferred intellectual approach to assimilating information, and includes David Kolb's model of information processing, which identifies two separate learning activities: perception and processing.

Social learning theories determine how students interact in the classroom and include Reichmann's and Grasha's types of learners: independent, dependent, collaborative, competitive, participant, and avoidant.

Multidimensional and instructional theories address the student's environmental preference for learning and includes the Learning Style Model of Dunn and Dunn and the multiple intelligences theory of Howard Gardner. This chapter focuses on this type of learning theory by Howard Gardner.

Multiple Intelligences Scenario

Ms. Cunningham, a seventh grade American History Teacher, is preparing a unit on the American Civil Rights Movement of the 1950's and 1960's. The teacher has created a succession of lessons to be completed over a two-week period to enhance her students' understanding of the events, organizations, and individuals that were crucial to the movement. When the unit is over, Ms. Cunningham wants her students to have a complete picture of the historical period. She designs a variety of activities that give the students the opportunity to explore historical and cultural aspects of the 1950's and 1960's, and to fully identify with those who were involved in the Movement. In order to reach her instructional goals, the students will read selected excerpts from the textbook and listen to various lecturers about the Movement. In addition to the aforementioned, the students will complete several exploratory tasks about the Civil Rights movement as well.

To begin the unit the teacher uses a KWL chart on the overhead to spur discussion and start the students' "juices" flowing. A KWL chart is a visual representation of what students already know, what they want to know, and what they learned at the end of a lesson. This activity is completed as a class. The students take turns sharing the tidbits of information that they already know about the Civil Rights movement. This information is on major figures, events and places involved in the Civil Rights movement. Upon establishing what basic prior knowledge the students possess, it is now time to begin discovering new information and confirming previously held information about the Civil Rights movement. Ms. Cunningham then lectures on the basic events, people, and places involved in the majority of the Civil Rights movement in order to provide students some framework within which to begin placing their new information.

She closes the first lesson by asking the students to create a timeline using the dates of events she has provided. This will be a working outline to be used throughout the unit. During a subsequent lesson, students are asked to share their outlines with their classmates in small groups. They should make corrections and comments on the outlines as needed. Ms. Cunningham gains class consensus of the proper order for their working outline as she places an enlarged version on the classroom wall.

The culmination of this unit will be a final project in which students create a portfolio containing work on three mini-projects. All students will listen to the same guest lecturers, view the same video-taped footage and participate in the same class discussions during the first half of each class. The remainder of each class period will be reserved for work on personal exploration pertaining to their portfolio pieces. Ms. Cunningham has provided a list of possible activities and a rubric for each suggested activity in order to support and to guide the student's work. She has also arranged her room so that "art" materials are in a central location; mapping and graphing information is grouped together and there is a section replete with reading and research materials.

Mrs. Cunningham's students will have many options for creating something chat can be included in their portfolios. Students will have the option to write letters to members of the community who were teenagers during the Civil Rights Movement, asking them to share their memories and experiences about life during the time period. Students may work in teams to prepare speeches based on period issues for their fellow classmates. Students may consult with the school's Media Specialist or more

knowledgeable other to find resources for the class, including popular music from the time period. They may also learn and share dances that were popular during the 1950's and 1960's. If they choose, students may include music in the plays they write and act out for their classmates. With the assistance of the Art instructor, students may opt to work together to create a mural that represents key figures of the Civil Rights Movement such as Rosa Parks and Martin Luther King Jr., with accompanying biographical information about each leader. Students may also create a map representing key events. Students may also work in groups to prepare short plays to enact for the class based on the readings and what they learn from the guest speakers. Afterwards, Mrs. Cunningham will moderate discussion sessions about the plays. All students will keep a record of their thoughts and feelings about the mini-lessons they completed. This journaling process will provide a synthesis of the materials with which they dealt. As one final measure, students present their portfolios to their classmates.

James, a student whose proclivities lean towards creative visual projects expresses interest in working on the mural of Civil Rights leaders. Mrs. Cunningham feels that James needs to shift gears and concentrate on other activities in the classroom. The teacher suggests that James work on creating the map and / or timeline. At the teacher's encouragement, James begins to work on the other projects, but his attention continues to drift towards the students painting the mural. He contributes some excellent ideas and shows so much interest in the details and creation of the mural, that the teacher allows him to shift his focus back towards the visual project.

In another seventh grade classroom, Mr. Smith taught a unit on the Civil Rights Movement by assigning textbook readings and lecturing the students on the historical events surrounding the Movement. Students were given sentence completion pop quizzes throughout the course of the lesson. The teacher showed videotaped programs to the class and each student wrote a short research paper about a Civil Rights leader or prominent figure. At the end of the unit, students were given a multiple choice and essay test.

What is Multiple Intelligences Theory?

Howard Gardner's theory of Multiple Intelligences utilizes aspects of cognitive and developmental psychology, anthropology, and sociology to explain the human intellect. Although Gardner had been working towards the concept of Multiple Intelligences for many years prior, the theory was introduced in 1983, with Gardner's book, *Frames of Mind*.

Gardner's research consisted of brain research and interviews with stroke victims, prodigies, and individuals with autism. Based on his findings, Gardner established eight criteria for identifying the seven (he has subsequently added an eighth and is considering a ninth) separate intelligences. The eight criteria used by Gardner to identify the intelligences are listed below:

- Isolation by brain damage/neurological evidence
- The existence of prodigies, idiot savants, and exceptional individuals
- Distinguishable set of core operations
- Developmental stages with an expert end state
- Evolutionary history and plausibility
- Susceptibility to encoding in a symbol system
- Support from experimental psychological tasks
- Support from psychometric research

For a more detailed look at these eight criteria, visit http://surfaquarium.com/MI/criteria.htm.

Originally, the theory accounted for seven separate intelligences. Subsequently, with the publishing of Gardner's Intelligence Reframed in 1999, two more intelligences were added to the list. The intelligences are Verbal/Linguistic, Logical/Mathematical, Visual/Spatial, Bodily-Kinesthetic, Musical, Interpersonal, Intrapersonal, Naturalistic, and Existential.

Gardner's theory challenges traditional, narrower views of intelligence. Previously accepted ideas of human intellectual capacity contend that an individual's intelligence is a fixed entity throughout his lifetime and that intelligence can be measured through an individual's logical and language abilities. According to Gardner's theory, an intelligence encompasses the ability to create and solve problems, create products or provide services that are valued within a culture or society. Originally, the theory accounted for seven separate intelligences. Subsequently, with the publishing of Gardner's Intelligence Reframed in 1999, two more intelligences were added to the list. The nine intelligences are outlined in more detail in the section below. Listed below are key points of Gardner's theory:

- All human beings possess all nine intelligences in varying degrees.
- Each individual has a different intelligence profile.
- Education can be improved by assessment of students' intelligence profiles and designing activities accordingly.
- Each intelligence occupies a different area of the brain.
- The nine intelligences may operate in consort or independently from one another.
- These nine intelligences may define the human species.

Gardner, a Professor of Education at Harvard University, and other researchers and educators continue to work towards a more holistic approach to education through Project Zero. For more information on the projects and research involved in Project Zero, visit the website at http://www.pz.harvard.edu.

Although the theory was not originally designed for use in a classroom application, it has been widely embraced by educators and enjoyed numerous adaptations in a variety of educational settings Teachers have always known that students had different strengths and weaknesses in the classroom. Gardner's research was able to articulate that and provide direction as to how to improve a student's ability in any given intelligence. Teachers were encouraged to begin to think of lesson planning in terms of meeting the needs of a variety of the intelligences. From this new thinking, schools such the Ross School in New York, an independent educational institution, and the Key Learning Community, a public magnet school in Indianapolis emerged to try teaching using a Multiple Intelligences curriculum. The focus of this part of the chapter will be on lesson design using the theory of Multiple Intelligences, and providing various resources that educator's may use to implement the theory into their classroom activities.

The Eight Intelligences

Verbal/Linguistic

Verbal/Linguistic intelligence refers to an individual's ability to understand and manipulate words and languages. Everyone is thought to possess this intelligence at some level. This includes reading, writing, speaking, and other forms of verbal and written communication. Teachers can enhance their students' verbal/linguistic intelligence by having them keep journals, play word games, and by encouraging discussion. People with strong rhetorical and oratory skills such as poets, authors, and attorneys exhibit

strong Linguistic intelligence. Some examples are T.S. Elliot, Maya Angelou, and Martin Luther King Jr. Traditionally, Linguistic intelligence and Logical/Mathematical intelligence have been highly valued in education and learning environments.

Logical/Mathematical

Logical/Mathematical intelligence refers to an individual's ability to do things with data: collect, and organize, analyze and interpret, conclude and predict. Individuals strong in this intelligence see patterns and relationships. These individuals are oriented toward thinking: inductive and deductive logic, numeration, and abstract patterns. They would be a contemplative problem solver; one who likes to play strategy games and to solve mathematical problems. Being strong in this intelligence often implies great scientific ability. This is the kind of intelligence studied and documented by Piaget. Teachers can strengthen this intelligence by encouraging the use of computer programming languages, critical-thinking activities, linear outlining, Piagetian cognitive stretching exercises, science-fiction scenarios, logic puzzles, and through the use of logical/sequential presentation of subject matter. Some real life examples people who are gifted with this intelligence are Albert Einstein, Niehls Bohr, and John Dewey.

Visual/Spatial

Visual/Spatial intelligence refers to the ability to form and manipulate a mental model. Individuals with strength in this area depend on visual thinking and are very imaginative. People with this kind of intelligence tend to learn most readily from visual presentations such as movies, pictures, videos, and demonstrations using models and props. They like to draw, paint, or sculpt their ideas and often express their feelings and moods through art. These individuals often daydream, imagine and pretend. They are good at reading diagrams and maps and enjoy solving mazes and jigsaw puzzles. Teachers can foster this intelligence by utilizing charts, graphs, diagrams, graphic organizers, videotapes, color, art activities, doodling, microscopes and computer graphics software. It could be characterized as right-brain activity. Pablo Picasso, Bobby Fischer, and Georgia O'Keefe are some examples of people gifted with this intelligence.

Bodily/Kinesthetic

Bodily/Kinesthetic intelligence refers to people who process information through the sensations they feel in their bodies. These people like to move around, touch the people they are talking to and act things out. They are good at small and large muscle skills; they enjoy all types of sports and physical activities. They often express themselves through dance. Teachers may encourage growth in this area of intelligence through the use of touching, feeling, movement, improvisation, "hands-on" activities, permission to squirm and wiggle, facial expressions and physical relaxation exercises. Some examples of people who are gifted with this intelligence are Michael Jordan, Martina Navratilova, and Jim Carrey.

Naturalistic

Naturalistic intelligence is seen in someone who recognizes and classifies plants, animals, and minerals including a mastery of taxonomies. They are holistic thinkers who recognize specimens and value the unusual. They are aware of species such as the flora and fauna around them. They notice natural and artificial taxonomies such as dinosaurs to algae and cars to clothes. Teachers can best foster this intelligence by using relationships among systems of species, and classification activities. Encourage the

study of relationships such as patterns and order, and compare-and-contrast sets of groups or look at connections to real life and science issues. Charles Darwin and John Muir are examples of people gifted in this way.

Musical Intelligence

Musical intelligence refers to the ability to understand, create, and interpret musical pitches, timbre, rhythm, and tones and the capability to compose music. Teachers can integrate activities into their lessons that encourage students' musical intelligence by playing music for the class and assigning tasks that involve students creating lyrics about the material being taught. Composers and instrumentalists are individuals with strength in this area. Wolfgang Amadeus Mozart and Louis Armstrong are examples.

Interpersonal

Although Gardner classifies interpersonal and intrapersonal intelligences separately, there is a lot of interplay between the two and they are often grouped together. Interpersonal intelligence is the ability to interpret and respond to the moods, emotions, motivations, and actions of others. Interpersonal intelligence also requires good communication and interaction skills, and the ability show empathy towards the feelings of other individuals. Teachers can encourage the growth of Interpersonal Intelligences by designing lessons that include group work and by planning cooperative learning activities. Counselors and social workers are professions that require strength in this area. Some examples of people with this intelligence include Gandhi, Ronald Reagan, and Bill Clinton.

Intrapersonal

Intrapersonal Intelligence, simply put, is the ability to know oneself. It is an internalized version of Interpersonal Intelligence. To exhibit strength in Intrapersonal Intelligence, an individual must be able to understand their own emotions, motivations, and be aware of their own strengths and weaknesses. Teachers can assign reflective activities, such as journaling to awaken students' Intrapersonal Intelligence. It’s important to note that this intelligence involves the use of all others. An individual should tap into their other intelligences to completely express their Intrapersonal Intelligence. Authors of classic autobiographies such as Jean Paul Satre and Frederick Douglas are examples of individuals who exhibited strong Interpersonal Intelligence in their lifetimes.

There is a ninth intelligence that has yet to experience full acceptance by educators in the classroom. This is Existential intelligence, which encompasses the ability to pose and ponder questions regarding the existence -- including life and death. This would be in the domain of philosophers and religious leaders.

The table below summarizes the strengths, learning preferences, and needs that correspond to the intelligences.

Table 1**.** *Summary of the Eight Intelligences*

Intelligence Area	Strengths	Preferences	Learns best through	Needs

Verbal / Linguistic	Writing, reading, memorizing dates, thinking in words, telling stories	Write, read, tell stories, talk, memorize, work at solving puzzles	Hearing and seeing words, speaking, reading, writing, discussing and debating	Books, tapes, paper diaries, writing tools, dialogue, discussion, debated, stories, etc.
Mathematical/ Logical	Math, logic, problem-solving, reasoning, patterns	Question, work with numbers, experiment, solve problems	Working with relationships and patterns, classifying, categorizing, working with the abstract	Things to think about and explore, science materials, manipulative, trips to the planetarium and science museum, etc.
Visual / Spatial	Maps, reading charts, drawing, mazes, puzzles, imagining things, visualization	Draw, build, design, create, daydream, look at pictures	Working with pictures and colors, visualizing, using the mind's eye, drawing	LEGOs, video, movies, slides, art, imagination games, mazes, puzzles, illustrated book, trips to art museums, etc.
Bodily / Kinesthetic	Athletics, dancing, crafts, using tools, acting	Move around, touch and talk, body language	Touching, moving, knowledge through bodily sensations, processing	Role-play, drama, things to build, movement, sports and physical games, tactile experiences, hands-on learning, etc.
Musical	Picking up sounds, remembering melodies, rhythms, singing	Sing, play an instrument, listen to music, hum	Rhythm, singing, melody, listening to music and melodies	Sing-along time, trips to concerts, music playing at home and school, musical instruments, etc.
Interpersonal	Leading, organizing, understanding people, communicating, resolving conflicts, selling	Talk to people, have friends, join groups	Comparing, relating, sharing, interviewing, cooperating	Friends, group games, social gatherings, community events, clubs, mentors/ apprenticeships, etc.
Intrapersonal	Recognizing strengths and weaknesses, setting goals, understanding self	Work alone, reflect pursue interests	Working alone, having space, reflecting, doing self-paced projects	Secret places, time alone, self-paced projects, choices, etc.

Naturalistic	Understanding nature, making distinctions, identifying flora and fauna	Be involved with nature, make distinctions	Working in nature, exploring living things, learning about plants and natural events	Order, same/different, connections to real life and science issues, patterns

Multiple Intelligences in the Classroom

There are many ways to incorporate Multiple Intelligences theory into the curriculum, and there is no set method by which to incorporate the theory. Some teachers set up learning centers with resources and materials that promote involving the different intelligences. For example, in the above scenario, Ms. Cunningham creates an area with art supplies in her classroom. Other instructors design simulations that immerse students into real life situations. Careful planning during the lesson design process will help to ensure quality instruction and valuable student experiences in the classroom.

Other instructional models, such as project-based and collaborative learning may be easily integrated into lessons with Multiple Intelligences. Collaborative learning allows students to explore their interpersonal intelligence, while project-based learning may help structure activities designed to cultivate the nine intelligences. For instance, Ms. Cunningham uses aspects of project-based learning in her classroom by allowing students to plan, create, and process (through reflection) information throughout the Civil Rights unit, while also integrating activities that teach to the intelligences. This particular instructional model allows students to work together to explore a topic and to create something as the end product. This works well with Multiple Intelligences theory, which places value on the ability to create products. By collaborating with the Media Specialist to give students the opportunity to choose from a variety of resources to complete their assignments, Ms. Cunningham uses aspects of resource-based learning, an instructional model that places the ultimate responsibility of choosing resources on the student.

It is important for teachers to carefully select activities that not only teach to the intelligences, but also realistically mesh with the subject matter of the lesson or unit. Multiple Intelligences theory should enhance, not detract from what is being taught.

Disney's website entitled Tapping into Multiple Intelligences suggests two approaches for implementing Multiple Intelligences theory in the classroom. One is a teacher-centered approach, in which the instructor incorporates materials, resources, and activities into the lesson that teach to the different intelligences. The other is a student-centered approach in which students actually create a variety of different materials that demonstrate their understanding of the subject matter. The student-centered approach allows students to actively use their varied forms of intelligence. In a teacher-centered lesson, the number of intelligences explored should be limited to two or three. To teach less than two is nearly impossible since the use of speech will always require the use of one's Verbal/Linguistic intelligence. In a student-centered lesson, the instructor may incorporate aspects of project-based learning, collaborative learning, or other inquiry-based models. In such a case, activities involving all nine intelligences may be presented as options for the class, but each student participates in only one or two of the tasks.

Ms. Cunningham incorporates both student-centered and teacher-centered activities into her unit on the Civil Rights Movement. The teacher-led lecture is a standard example of a teacher-centered activity.

The lecture teaches to students' Verbal/Linguistic Intelligence. The viewing of the videotape is another example of a teacher-centered activity. This activity incorporates Visual/Spatial Intelligence into how the unit is learned. It is important to note that many activities, although designed to target a particular intelligence, may also utilize other intelligences as well. For example, in Ms. Cunningham's classroom the students may work together on creating a mural of Civil Rights Leaders. This is a student-centered activity that directly involves Visual/Spatial intelligence, but also gives students a chance to exercise their Interpersonal Intelligence. The journal assignment, also a student-centered activity, is designed to enhance students' Intrapersonal Intelligence by prompting them to reflect on their feelings and experiences in relation to the Civil Rights movement. This activity also taps into Verbal/Linguistic Intelligence. The timeline and map assignments are student-centered activities that are designed to enhance students' Logical/Mathematical Intelligence, but they also delve into Visual/Spatial Intelligence. Students must collect and organize information for both the timeline and the map therefore using their Logical/Mathematical intelligence. In creating these items, students must think visually as well. By incorporating dance into one lesson, Ms. Cunningham is able to promote awareness of her students' Bodily-Kinesthetic intelligence. By showing videos of popular dances from the time period, or inviting an expert from the community to talk about the social aspects of dance, Ms. Cunningham might incorporate a teacher-centered activity. Having students learn and perform dances is a student-centered way of teaching through Bodily-Kinesthetic intelligence. The short plays that students prepare involve Bodily-Kinesthetic intelligence, as well as Interpersonal and Verbal/Linguistic intelligences. Class discussions provide an opportunity for students to exercise both areas of their personal intelligences, as well as to reinforce the subject matter.

Planning and Implementing Student-Centered Lessons

This type of lesson revolves around student created materials. The types of activities and assignments that support student-centered lessons can be easily designed in concert with many of the inquiry-based models discussed in the text of this book. One of the most important aspects of student-centered lessons is allowing students to make choices. Teachers should encourage students to exercise their weaker intelligences, but allow them to explore their stronger areas as well. In Ms. Cunningham's class, the student named James is very strong in Visual/Spatial Intelligence and always leans towards this type of project. The teacher encourages James to participate in other activities, but when it is obvious that his interest lies in working on the mural Ms. Cunningham allows him to work on the project.

Listed below are steps to implement a student-centered lesson or unit:

- Carefully identify instructional goals, objectives, and instructional outcomes.
- Consider activities that you can integrate into the lesson or unit that teach to the different intelligences. Teachers need not incorporate all nine intelligences into one lesson.
- When gathering resources and materials, consider those which will allow students to explore their multiple intelligences.
- Specify a timeframe for the lesson or unit.
- Allow for considerable element of student choice when designing activities and tasks for the intelligences
- Design activities that are student-centered, using inquiry-based models of instruction.
- Provide a rubric for student activities. You might consider having students help create rubrics.
- Incorporate assessment into the learning process.

In an effort to maximize students' interest in both the subject matter and their own learning proclivities, teachers may wish to teach their students a little bit about Multiple Intelligences. Teachers can brief the class about each type of intelligence and then follow up with a self-assessment for each student. In this way, students will be able to capitalize on their strengths and work on their weaker areas. Disney's Tapping Into Multiple Intelligences website includes a self-assessment.

Planning and Implementing a Teacher-Centered Lesson

Structured, teacher-centered activities provide an opportunity for teachers to introduce material and establish prior knowledge and student conceptions. Teachers may lecture students, show informational videos and posters, perform drills, pose problem-solving exercises, arrange museum visits, and plan outings to concerts. There are all examples of teacher-centered activities. All of these activities integrate the Multiple Intelligences into the subject matter being taught. Teacher-centered lessons should be limited to a few activities that provide a foundation for students to later complete more exploratory tasks in which they can demonstrate understanding of the material. A teacher may choose to start an instructional unit or lesson with teacher-centered activities and then follow up with subsequent student-centered lessons. Teachers may follow these steps when designing and implementing a teacher-centered lesson:

- Identify instructional goals and objectives
- Consider teacher-centered activities that teach to students' Multiple Intelligences. In a teacher-centered lesson, limit the number of activities to two or three.
- Consider what resources and materials you will need to implement the lesson. For example, will you need to schedule a museum visit or to consult the Media Specialist for videos or other media?
- Specify a timeframe for the lesson or unit.
- Provide an opportunity for reflection by students
- Provide a rubric to scaffold student activities
- Integrate assessment into the learning process

Assessment is one of the biggest challenges in incorporating Multiple Intelligences in the classroom. Ms. Cunningham's students are given the option of working on several mini-projects during the course of the Civil Rights unit. At the end of the unit, their performance is assessed through a portfolio that represents their work on these projects. It is very important for assessment to be integrated into the learning process. Assessment should give students the opportunity to demonstrate their understanding of the subject matter. One of the main goals of acknowledging and using Multiple Intelligences in the classroom is to increase student understanding of material by allowing them to demonstrate the ways in which they understand the material. Teachers need to make their expectations clear, and may do so in the form of a detailed rubric.

Benefits of Multiple Intelligences

Using Multiple Intelligences theory in the classroom has many benefits:

- As a teacher and learner you realize that there are many ways to be "smart."
- All forms of intelligence are equally celebrated.

- By having students create work that is displayed to parents and other members of the community, your school could see more parent and community involvement.
- A sense of increased self-worth may be seen as students build on their strengths and work towards becoming an expert in certain areas.
- Students may develop strong problem solving skills that they can use real life situations.

Multiple Intelligences: Classroom Application (Table added by Brandy Bellamy and Camille Baker, 2005)

Table 2. *Multiple Intelligences: Classroom Application (Table added by Brandy Bellamy and Camille Baker, 2005)*

	Teacher Centered	Student Centered
 Verbal/Linguistic	• Present content verbally • Ask questions aloud and look for student feedback • Interviews	• Student Presents Material • Students read content and prepare a presentation for his/her classmates • Students debate over an issue
 Logical/Mathematical	• Provide brain teasers or challenging questions to begin lessons. • Make logical connections between the subject matter and authentic situations to answer the question "why?"	• Students categorize information in logical sequences for organization. • Students create graphs or charts to explain written info. • Students participate in webquests associated with the content
 Bodily/Kinesthetic	• Use props during lecture • Provide tangible items pertaining to content for students to examine • Review using sports related examples (throw a ball to someone to answer a question)	• Students use computers to research subject matter. • Students create props of their own explaining subject matter (shadow boxes, mobiles, etc...) • Students create review games.
 Visual/Spatial	When presenting the information, use visuals to explain content:</br> PowerPoint Slides, Charts, Graphs, cartoons, videos, overheads, smartboards	• Have students work individually or in groups to create visuals pertaining to the information: • Posters; timelines; models; powerpoint slides; maps; illustrations, charts; concept mapping



Musical

- Play music in the classroom during reflection periods
- Show examples or create musical rhythms for students to remember things

- Create a song or melody with the content embedded for memory
- Use well known songs to memorize formulas, skills, or test content



Interpersonal

- Be aware of body language and facial expressions
- Offer assistance whenever needed
- Encourage classroom discussion

- Encourage collaboration among peers
- Group work strengthens interpersonal connections
- Peer feedback and peer tutoring
- Students present to the class
- Encourage group editing



Intrapersonal

- Encourage journaling as a positive outlet for expression
- Introduce web logging (blogs)
- Make individual questions welcome
- Create a positive environment.

- Journaling
- Individual research on content
- Students create personal portfolios of work



Naturalistic

- Take students outside to enjoy nature while in learning process (lecture)
- Compare authentic subject matter to natural occurrences.
- Relate subject matter to stages that occur in nature (plants, weather, etc.)

- Students organize thoughts using natural cycles
- Students make relationships among content and the natural environment (how has nature had an impact?)
- Students perform community service

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CHAPER 10

Bloom's Taxonomy

INTRODUCTION

Benjamin Samuel Bloom (1913-1999) was born on February 21, 1913 in Lansford, Pennsylvania. Bloom received both a bachelor's and master's degree from Pennsylvania State University in 1935. He went on to earn a doctorate's degree from the University of Chicago in 1942, where he acted as first a staff member of the Board of Examinations (1940-43), then a University Examiner (1943-59), as well as an instructor in the Department of Education, beginning in 1944.

Bloom's most recognized and highly regarded initial work spawned from his collaboration with his mentor and fellow examiner Ralph W. Tyler and came to be known as Bloom's Taxonomy. These ideas are highlighted in his third publication, *Taxonomy of Educational Objectives: Handbook I, The Cognitive Domain.* He later wrote a second handbook for the taxonomy in 1964, which focuses on the affective domain. Bloom's research in early childhood education, published in his 1964 *Stability and Change in Human Characteristics* sparked widespread interest in children and learning and eventually and directly led to the formation of the Head Start program in America. Aside from his scholarly contributions to the field of education, Benjamin Bloom was an international activist and educational consultant. In 1957, he traveled to India to conduct workshops on evaluation, which led to great changes in the Indian educational system. He helped create the International Association for the Evaluation of Educational Achievement, the IEA, and organized the International Seminar for Advanced Training in Curriculum Development. He developed the Measurement, Evaluation, and Statistical Analysis (MESA) program at the University of Chicago. Benjamin Bloom died in his home in Chicago on September 13, 1999.

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Bloom's Taxonomy: Original and Revised

Introduction

One of the basic questions facing educators has always been "Where do we begin in seeking to improve human thinking?" (Houghton, 2004). Fortunately we do not have to begin from scratch in searching for answers to this complicated question. The Communities Resolving Our Problems (C.R.O.P.) recommends, "One place to begin is in defining the nature of thinking. Before we can make it better, we need to know more of what it is" (Houghton, 2004).

Benjamin S. Bloom extensively contemplated the nature of thinking, eventually authoring or co-authoring 18 books. According to a biography of Bloom, written by former student Elliot W. Eisner, "It was clear that he was in love with the process of finding out, and finding out is what I think he did best. One of Bloom's great talents was having a nose for what is significant (2002).

Although it received little attention when first published, Bloom's Taxonomy has since been translated into 22 languages and is one of the most widely applied and most often cited references in education. (Anderson & Sosniak, 1994, preface), (Houghton, 2004), (Krathwohl, 2002), (oz-TeacherNet, 2001). As of this writing, three other chapters in this ebook make reference to Bloom's Taxonomy, yet another testament to its relevance.

History

In 1780, Abigail Adams stated, "Learning is not attained by chance; it must be sought for with ardor and attended to with diligence" (quotationspage.com, 2005). Learning, teaching, identifying educational goals, and thinking are all complicated concepts interwoven in an intricate web. Bloom was arduous, diligent, and patient while seeking to demystify these concepts and untangle this web. He made "the improvement of student learning" (Bloom 1971, Preface) the central focus of his life's work.

Discussions during the 1948 Convention of the American Psychological Association led Bloom to spearhead a group of educators who eventually undertook the ambitious task of classifying educational goals and objectives. Their intent was to develop a method of classification for thinking behaviors that were believed to be important in the processes of learning. Eventually, this framework became a taxonomy of three domains:

- The cognitive - knowledge based domain, consisting of six levels
- The affective - attitudinal based domain, consisting of five levels, and
- The psychomotor - skills based domain, consisting of six levels.

In 1956, eight years after the group first began, work on the cognitive domain was completed and a handbook commonly referred to as "Bloom's Taxonomy" was published. This chapter focuses its attention on the cognitive domain.

While Bloom pushed for the use of the term "taxonomy," others in the group resisted because of the unfamiliarity of the term within educational circles. Eventually Bloom prevailed, forever linking his name and the term. The small volume intended for university examiners "has been transformed into a basic reference for all educators worldwide. Unexpectedly, it has been used by curriculum planners, administrators, researchers, and classroom teachers at all levels of education" (Anderson & Sosniak, 1994, p. 1). While it should be noted that other educational taxonomies and hierarchical systems have been developed, it is Bloom's Taxonomy which remains, even after nearly fifty years, the de facto standard.

What is Bloom's Taxonomy?

Understanding that "taxonomy" and "classification" are synonymous helps dispel uneasiness with the term. Bloom's Taxonomy is a multi-tiered model of classifying thinking according to six cognitive levels of complexity. Throughout the years, the levels have often been depicted as a stairway, leading many teachers to encourage their students to "climb to a higher (level of) thought." The lowest three levels are: knowledge, comprehension, and application. The highest three levels are: analysis, synthesis, and evaluation. "The taxonomy is hierarchical; [in that] each level is subsumed by the higher levels. In other words, a student functioning at the 'application' level has also mastered the material at the 'knowledge'

and 'comprehension' levels." (UW Teaching Academy, 2003). One can easily see how this arrangement led to natural divisions of lower and higher level thinking.

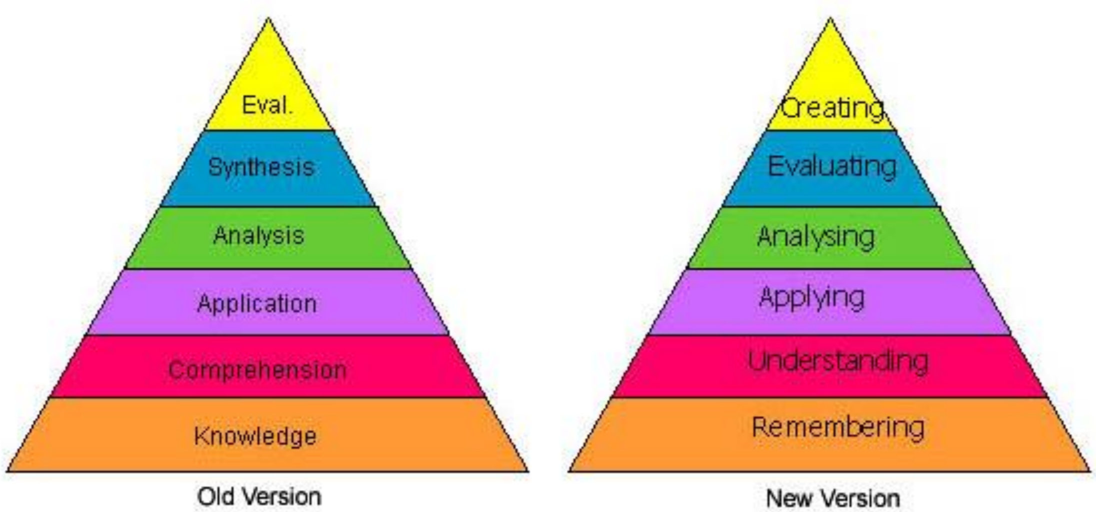
Clearly, Bloom's Taxonomy has stood the test of time. Due to its long history and popularity, it has been condensed, expanded, and reinterpreted in a variety of ways. Research findings have led to the discovery of a veritable smorgasbord of interpretations and applications falling on a continuum ranging from tight overviews to expanded explanations. Nonetheless, one recent revision (designed by one of the co-editors of the original taxonomy along with a former Bloom student) merits particular attention.

Revised Bloom's Taxonomy (RBT)

During the 1990's, a former student of Bloom's, Lorin Anderson, led a new assembly which met for the purpose of updating the taxonomy, hoping to add relevance for 21st century students and teachers. This time "representatives of three groups [were present]: cognitive psychologists, curriculum theorists and instructional researchers, and testing and assessment specialists" (Anderson, & Krathwohl, 2001, p. xxviii). Like the original group, they were also arduous and diligent in their pursuit of learning, spending six years to finalize their work. Published in 2001, the revision includes several seemingly minor yet actually quite significant changes. Several excellent sources are available which detail the revisions and reasons for the changes. A more concise summary appears here. The changes occur in three broad categories: terminology, structure, and emphasis.

Terminology Changes

Changes in terminology between the two versions are perhaps the most obvious differences and can also cause the most confusion. Basically, Bloom's six major categories were changed from noun to verb forms. Additionally, the lowest level of the original, knowledge was renamed and became remembering. Finally, comprehension and synthesis were retitled to understanding and creating. In an effort to minimize the confusion, comparison images appear below.



The new terms are defined as:

- Remembering: Retrieving, recognizing, and recalling relevant knowledge from long-term memory.
- Understanding: Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.
- Applying: Carrying out or using a procedure through executing, or implementing.
- Analyzing: Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.
- Evaluating: Making judgments based on criteria and standards through checking and critiquing.
- Creating: Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing.

(Anderson & Krathwohl, 2001, pp. 67-68)

Structural Changes

Structural changes seem dramatic at first, yet are quite logical when closely examined. Bloom's original cognitive taxonomy was a one-dimensional form. With the addition of products, the Revised Bloom's Taxonomy takes the form of a two-dimensional table. One of the dimensions identifies The Knowledge Dimension (or the kind of knowledge to be learned) while the second identifies The Cognitive Process Dimension (or the process used to learn). As represented on the grid below, the intersection of the knowledge and cognitive process categories form twenty-four separate cells as represented on the "Taxonomy Table" below.

The Knowledge Dimension on the left side is composed of four levels that are defined as Factual, Conceptual, Procedural, and Meta-Cognitive. The Cognitive Process Dimension across the top of the grid consists of six levels that are defined as Remember, Understand, Apply, Analyze, Evaluate, and Create. Each level of both dimensions of the table is subdivided.

Each of the four Knowledge Dimension levels is subdivided into either three or four categories (e.g. Factual is divided into Factual, Knowledge of Terminology, and Knowledge of Specific Details and Elements). The Cognitive Process Dimension levels are also subdivided with the number of sectors in each level ranging from a low of three to a high of eight categories. For example, Remember is subdivided into the three categories of Remember, Recognizing, and Recalling while the Understanding level is divided into eight separate categories. The resulting grid, containing 19 subcategories is most helpful to teachers in both writing objectives and aligning standards with curricular. The "Why" and "How" sections of this chapter further discuss use of the Taxonomy Table as well as provide specific examples of applications.

Table1**.** *Bloom's Taxonomy*

The Knowledge Dimension	The Cognitive Process Dimension					
	Remember	Understand	Apply	Analyze	Evaluate	Create
Factual Knowledge	List	Summarize	Classify	Order	Rank	Combine

Conceptual Knowledge	Describe	Interpret	Experiment	Explain	Assess	Plan
Procedural Knowledge	Tabulate	Predict	Calculate	Differentiate	Conclude	Compose
Meta-Cognitive Knowledge	Appropriate Use	Execute	Construct	Achieve	Action	Actualize

http://oregonstate.edu/instruct/coursedev/models/id/taxonomy/#table Designer/Developer - Dianna Fisher

Changes in Emphasis

Emphasis is the third and final category of changes. As noted earlier, Bloom himself recognized that the taxonomy was being "unexpectedly" used by countless groups never considered an audience for the original publication. The revised version of the taxonomy is intended for a much broader audience. Emphasis is placed upon its use as a "more authentic tool for curriculum planning, instructional delivery and assessment" (oz-TeacherNet, 2001).

Why Use Bloom's Taxonomy?

As history has shown, this well known, widely applied scheme filled a void and provided educators with one of the first systematic classifications of the processes of thinking and learning. The cumulative hierarchical framework consisting of six categories each requiring achievement of the prior skill or ability before the next, more complex, one, remains easy to understand. Out of necessity, teachers must measure their students' ability. Accurately doing so requires a classification of levels of intellectual behavior important in learning. Bloom's Taxonomy provided the measurement tool for thinking.

With the dramatic changes in society over the last five decades, the Revised Bloom's Taxonomy provides an even more powerful tool to fit today's teachers' needs. The structure of the Revised Taxonomy Table matrix "provides a clear, concise visual representation" (Krathwohl, 2002) of the alignment between standards and educational goals, objectives, products, and activities.

Today's teachers must make tough decisions about how to spend their classroom time. Clear alignment of educational objectives with local, state, and national standards is a necessity. Like pieces of a huge puzzle, everything must fit properly. The Revised Bloom's Taxonomy Table clarifies the fit of each lesson plan's purpose, "essential question," goal or objective. The twenty-four-cell grid from Oregon State University that is shown above can easily be used in conjunction with Printable Taxonomy Table Examples to clearly define the "Essential Question" or lesson objective.

How Can Bloom's Taxonomy Be Used?

A search of the World Wide Web will yield clear evidence that Bloom's Taxonomy has been applied to a variety of situations. Current results include a broad spectrum of applications represented by articles and websites describing everything from corrosion training to medical preparation. In almost all circumstances when an instructor desires to move a group of students through a learning process utilizing an organized framework, Bloom's Taxonomy can prove helpful. Yet the educational setting (K-

graduate) remains the most often used application. A brief explanation of one example is described below.

The educational journal Theory into Practice published an entire issue on the Revised Bloom's Taxonomy. Included is an article entitled, "Using the Revised Taxonomy to Plan and Deliver Team-Taught, Integrated, Thematic Units" (Ferguson, 2002).

The writer describes the use of the revised Bloom's Taxonomy to plan and deliver an integrated English and history course entitled "Western Culture." The taxonomy provided the team-teachers with a common language with which to translate and discuss state standards from two different subject areas. Moreover, it helped them to understand how their subjects overlapped and how they could develop conceptual and procedural knowledge concurrently. Furthermore, the taxonomy table in the revised taxonomy provided the history and English teachers with a new outlook on assessment and enabled them to create assignments and projects that required students to operate at more complex levels of thinking (Abstract, Ferguson, 2002).

Additionally, The Encyclopedia of Educational Technology website contains an excellent and extensive description of the use of the Revised Taxonomy Table in writing, examining and revising objectives to insure the alignment of the objectives with both the standards and the assessments. Three charts can be found on the site one of which compares "Unclear Objectives" with "Revised Objectives."

Bloom's group initially met hoping to reduce the duplication of effort by faculty at various universities. In the beginning, the scope of their purpose was limited to facilitating the exchange of test items measuring the same educational objectives. Intending the Taxonomy "as a method of classifying educational objectives, educational experiences, learning processes, and evaluation questions and problems" (Paul, 1985 p. 39), numerous examples of test items (mostly multiple choice) were included. This led to a natural linkage of specific verbs and products with each level of the taxonomy. Thus, when designing effective lesson plans, teachers often look to Bloom's Taxonomy for guidance.

Likewise the Revised Taxonomy includes specific verb and product linkage with each of the levels of the Cognitive Process Dimension. However, due to its 19 subcategories and two-dimensional organization, there is more clarity and less confusion about the fit of a specific verb or product to a given level. Thus the Revised Taxonomy offers teachers an even more powerful tool to help design their lesson plans.

As touched upon earlier, through the years, Bloom's Taxonomy has given rise to educational concepts including terms such as high and low level thinking. It has also been closely linked with multiple intelligences (Noble, 2004) problem solving skills, creative and critical thinking, and more recently, technology integration. For example, currently, the State of Georgia K-12 Technology Plan has included in its website an excellent graphic depicting technology alignment using Bloom's Taxonomy with learning through the two axes of instructional approach and authenticity.

Using the Revised Taxonomy in an adaptation from the Omaha Public Schools Teacher's Corner, a lesson objective based upon the story of Goldilocks and the Three Bears is presented for each of the six levels of the Cognitive Process as shown on the Revised Taxonomy Table.

Remember: Describe where Goldilocks lived.

Understand: Summarize what the Goldilocks story was about.

Apply: Construct a theory as to why Goldilocks went into the house.

Analyze: Differentiate between how Goldilocks reacted and how you would react in each story event.

Evaluate: Assess whether or not you think this really happened to Goldilocks.

Create: Compose a song, skit, poem, or rap to convey the Goldilocks story in a new form.

Although this is a very simple example of the application of Bloom's taxonomy the author is hopeful that it will demonstrate both the ease and the usefulness of the Revised Taxonomy Table.

Summary

Countless people know, love and are comfortable with the original Bloom's Taxonomy and are understandably hesitant to change. After all, change is difficult for most people. The original Bloom's Taxonomy was and is a superb tool for educators. Yet, even "the original group always considered the [Taxonomy] framework a work in progress, neither finished nor final" (Anderson & Krathwohl, 2001 p. xxvii). The new century has brought us the Revised Bloom's Taxonomy which really is new and improved. Try it out; this author thinks you will like it better than cake.

Appendix: Bloom Biography

by Katie Davis, Yingnan Chen, & Mike Cambell

Spring, 2010



Caption: Photograph of Benjamin Bloom' *Image Source: http://redie.uabc.mx/contenido/vol6no2/art-104-spa/bloom.png*

Benjamin Samuel Bloom, one of the greatest minds to influence the field of education, was born on February 21, 1913 in Lansford, Pennsylvania. As a young man, he was already an avid reader and curious researcher. Bloom received both a bachelor's and master's degree from Pennsylvania State University in 1935. He went on to earn a doctorate's degree from the University of Chicago in 1942, where he acted as first a staff member of the Board of Examinations (1940-43), then a University Examiner (1943-59), as

well as an instructor in the Department of Education, beginning in 1944. In 1970, Bloom was honored with becoming a Charles H. Swift Distinguished Professor at the University of Chicago.

Bloom's most recognized and highly regarded initial work spawned from his collaboration with his mentor and fellow examiner Ralph W. Tyler and came to be known as Bloom's Taxonomy. These ideas are highlighted in his third publication, Taxonomy of Educational Objectives: Handbook I, The Cognitive Domain. He later wrote a second handbook for the taxonomy in 1964, which focuses on the affective domain. Bloom's research in early childhood education, published in his 1964 Stability and Change in Human Characteristics sparked widespread interest in children and learning and eventually and directly led to the formation of the Head Start program in America. In all, Bloom wrote or collaborated on eighteen publications from 1948-1993.

Aside from his scholarly contributions to the field of education, Benjamin Bloom was an international activist and educational consultant. In 1957, he traveled to India to conduct workshops on evaluation, which led to great changes in the Indian educational system. He helped create the International Association for the Evaluation of Educational Achievement, the IEA, and organized the International Seminar for Advanced Training in Curriculum Development. He developed the Measurement, Evaluation, and Statistical Analysis (MESA) program at eh University of Chicago. He was chairman of both the research and development committees of the College Entrance Examination Board and the president of the American Educational Research Association.

Benjamin Bloom died in his home in Chicago on September 13, 1999. In addition to his many accomplishments, he was a dedicated family man and was survived by his wife and two sons.

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CHAPTER 11

Maslow's Hierarchy of Needs Theory and Motivation

INTRODUCTION

Abraham Harold Maslow (1908-1970) was born on April 1, 1908, in Brooklyn, New York. His parents were Jewish immigrants from Russia who were rather uneducated. Maslow was the sole Jewish boy in his neighborhood; therefore, he was unhappy and lonesome throughout the majority of his childhood. Maslow also had problems within his home. His father continually degraded him and pushed him to excel in areas that were of no interest to him. His mother also treated him poorly. Because of this Maslow wanted no interaction with his parents. Maslow perceived his mother as being entirely insensitive and unloving.

After a difficulty childhood, Maslow was able to obtain a Ph.D. form the University of Wisconsin in 1934. After he received his Ph.D. in 1934, he continued to teach at the University of Wisconsin. Maslow theorized that humans have several inborn needs that were the basis for his theory of motivation on the hierarchy of needs. Furthermore, he believed that the needs are ranked in terms of a hierarchy. Nonhumans can possess the lower, more basic needs also, but only humans may possess the higher needs. First, physiological needs are related to survival. These necessities include food, water, elimination, sex, and sleep. If one of these needs is not achieved, it will rule the individual's life. Maslow believed that most humans achieve these needs easily. After one need is met, the individual moves onto the next level. However, Maslow stressed that a person can experience periodic times of hunger or thirst and still move onto higher levels, but the individual's life cannot be dominated by just one need.

Safety needs appear when physiological needs are fulfilled. These are the needs for structure, order, security, and predictability. Reducing uncertainty is the chief objective at this stage. Individuals are free from danger, fear, and chaos when the safety needs are adequately met. Affiliation is the next level after the physiological and safety needs are attained. This level includes the need for friends, family, identification with a group, and a personally intimate relationship. A person may experience feelings of solitude and emptiness if these needs are not quenched. The esteem needs will follow only if one has achieved the physiological, safety, and belongingness needs. In this stage, approval must come from earned respect and not from fame or social status. Acceptance and self-esteem originate from engaging in activities that are deemed as being socially constructive. An individual may possess feelings of inferiority if the esteem needs are not reached.

If the previous needs are sufficiently met, a person now has the opportunity to become self-actualized. However, self-actualization is an exceptional feat since it is so rarely occurs. A person who reaches this stage strives for growth and self- improvement. According to Maslow, the majority of people advance through the hierarchy of needs from the bottom up, in an orderly fashion.

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A Theory of Human Motivation

I. INTRODUCTION

In a previous paper (13) various propositions were presented which would have to be included in any theory of human motivation that could lay claim to being definitive. These conclusions may be briefly summarized as follows:

1. The integrated wholeness of the organism must be one of the foundation stones of motivation theory.

2. The hunger drive (or any other physiological drive) was rejected as a centering point or model for a definitive theory of motivation. Any drive that is somatically based and localizable was shown to be atypical rather than typical in human motivation.

3. Such a theory should stress and center itself upon ultimate or basic goals rather than partial or superficial ones, upon ends rather than means to these ends. Such a stress would imply a more central place for unconscious than for conscious motivations.

4. There are usually available various cultural paths to the same goal. Therefore conscious, specific, local-cultural desires are not as fundamental in motivation theory as the more basic, unconscious goals.

5. Any motivated behavior, either preparatory or consummatory, must be understood to be a channel through which many basic needs may be simultaneously expressed or satisfied. Typically an act has more than one motivation.

6. Practically all organismic states are to be understood as motivated and as motivating.

7. Human needs arrange themselves in hierarchies of pre-potency. That is to say, the appearance of one need usually rests on the prior satisfaction of another, more pre-potent need. Man is a perpetually wanting animal. Also no need or drive can be treated as if it were isolated or discrete; every drive is related to the state of satisfaction or dissatisfaction of other drives.

8. *Lists* of drives will get us nowhere for various theoretical and practical reasons. Furthermore any classification of motivations [p. 371] must deal with the problem of levels of specificity or generalization the motives to be classified.

9. Classifications of motivations must be based upon goals rather than upon instigating drives or motivated behavior.

10. Motivation theory should be human-centered rather than animal-centered.

11. The situation or the field in which the organism reacts must be taken into account but the field alone can rarely serve as an exclusive explanation for behavior. Furthermore the field itself must be interpreted in terms of the organism. Field theory cannot be a substitute for motivation theory.

12. Not only the integration of the organism must be taken into account, but also the possibility of isolated, specific, partial or segmental reactions. It has since become necessary to add to these another affirmation.

13. Motivation theory is not synonymous with behavior theory. The motivations are only one class of determinants of behavior. While behavior is almost always motivated, it is also almost always biologically, culturally and situationally determined as well.

The present paper is an attempt to formulate a positive theory of motivation which will satisfy these theoretical demands and at the same time conform to the known facts, clinical and observational as well as experimental. It derives most directly, however, from clinical experience. This theory is, I think, in the functionalist tradition of James and Dewey, and is fused with the holism of Wertheimer (19), Goldstein (6), and Gestalt Psychology, and with the dynamicism of Freud (4) and Adler (1). This fusion or synthesis may arbitrarily be called a 'general-dynamic' theory.

It is far easier to perceive and to criticize the aspects in motivation theory than to remedy them. Mostly this is because of the very serious lack of sound data in this area. I conceive this lack of sound facts to be due primarily to the absence of a valid theory of motivation. The present theory then must be considered to be a suggested program or framework for future research and must stand or fall, not so much on facts available or evidence presented, as upon researches to be done, research suggested perhaps, by the questions raised in this paper.[p. 372]

II. THE BASIC NEEDS

The 'physiological' needs. -- The needs that are usually taken as the starting point for motivation theory are the so-called physiological drives. Two recent lines of research make it necessary to revise our customary notions about these needs, first, the development of the concept of homeostasis, and second, the finding that appetites (preferential choices among foods) are a fairly efficient indication of actual needs or lacks in the body.

Homeostasis refers to the body's automatic efforts to maintain a constant, normal state of the blood stream. Cannon (2) has described this process for (1) the water content of the blood, (2) salt content, (3) sugar content, (4) protein content, (5) fat content, (6) calcium content, (7) oxygen content, (8) constant hydrogen-ion level (acid-base balance) and (9) constant temperature of the blood. Obviously this list can be extended to include other minerals, the hormones, vitamins, etc.

Young in a recent article (21) has summarized the work on appetite in its relation to body needs. If the body lacks some chemical, the individual will tend to develop a specific appetite or partial hunger for that food element.

Thus it seems impossible as well as useless to make any list of fundamental physiological needs for they can come to almost any number one might wish, depending on the degree of specificity of description. We cannot identify all physiological needs as homeostatic. That sexual desire, sleepiness, sheer activity and maternal behavior in animals, are homeostatic, has not yet been demonstrated. Furthermore, this list would not include the various sensory pleasures (tastes, smells, tickling, stroking) which are probably physiological and which may become the goals of motivated behavior.

In a previous paper (13) it has been pointed out that these physiological drives or needs are to be considered unusual rather than typical because they are isolable, and because they are localizable somatically. That is to say, they are relatively independent of each other, of other motivations [p. 373] and of the organism as a whole, and secondly, in many cases, it is possible to demonstrate a localized, underlying somatic base for the drive. This is true less generally than has been thought (exceptions are fatigue, sleepiness, maternal responses) but it is still true in the classic instances of hunger, sex, and thirst.

It should be pointed out again that any of the physiological needs and the consummatory behavior involved with them serve as channels for all sorts of other needs as well. That is to say, the person who thinks he is hungry may actually be seeking more for comfort, or dependence, than for vitamins or proteins. Conversely, it is possible to satisfy the hunger need in part by other activities such as drinking water or smoking cigarettes. In other words, relatively isolable as these physiological needs are, they are not completely so.

Undoubtedly these physiological needs are the most pre-potent of all needs. What this means specifically is, that in the human being who is missing everything in life in an extreme fashion, it is most likely that the major motivation would be the physiological needs rather than any others. A person who is lacking food, safety, love, and esteem would most probably hunger for food more strongly than for anything else.

If all the needs are unsatisfied, and the organism is then dominated by the physiological needs, all other needs may become simply non-existent or be pushed into the background. It is then fair to characterize the whole organism by saying simply that it is hungry, for consciousness is almost completely preempted by hunger. All capacities are put into the service of hunger-satisfaction, and the organization of these capacities is almost entirely determined by the one purpose of satisfying hunger. The receptors and effectors, the intelligence, memory, habits, all may now be defined simply as hunger-gratifying tools. Capacities that are not useful for this purpose lie dormant, or are pushed into the background. The urge to write poetry, the desire to acquire an automobile, the interest in American history, the desire for a new pair of shoes are, in the extreme case, forgotten or become of secondary importance [p.374]. For the man who is extremely and dangerously hungry, no other interests exist but food. He dreams food, he remembers food, he thinks about food, he emotes only about food, he perceives only food and he wants only food. The more subtle determinants that ordinarily fuse with the physiological drives in organizing even feeding, drinking or sexual behavior, may now be so completely overwhelmed as to allow us to speak at this time (but only at this time) of pure hunger drive and behavior, with the one unqualified aim of relief.

Another peculiar characteristic of the human organism when it is dominated by a certain need is that the whole philosophy of the future tends also to change. For our chronically and extremely hungry man, Utopia can be defined very simply as a place where there is plenty of food. He tends to think that, if only he is guaranteed food for the rest of his life, he will be perfectly happy and will never want anything more. Life itself tends to be defined in terms of eating. Anything else will be defined as unimportant. Freedom, love, community feeling, respect, philosophy, may all be waved aside as fripperies which are useless since they fail to fill the stomach. Such a man may fairly be said to live by bread alone.

It cannot possibly be denied that such things are true but their *generality* can be denied. Emergency conditions are, almost by definition, rare in the normally functioning peaceful society. That this truism can be forgotten is due mainly to two reasons. First, rats have few motivations other than physiological

ones, and since so much of the research upon motivation has been made with these animals, it is easy to carry the rat-picture over to the human being. Secondly, it is too often not realized that culture itself is an adaptive tool, one of whose main functions is to make the physiological emergencies come less and less often. In most of the known societies, chronic extreme hunger of the emergency type is rare, rather than common. In any case, this is still true in the United States. The average American citizen is experiencing appetite rather than hunger when he says "I am [p. 375] hungry." He is apt to experience sheer life-and-death hunger only by accident and then only a few times through his entire life.

Obviously a good way to obscure the 'higher' motivations, and to get a lopsided view of human capacities and human nature, is to make the organism extremely and chronically hungry or thirsty. Anyone who attempts to make an emergency picture into a typical one, and who will measure all of man's goals and desires by his behavior during extreme physiological deprivation is certainly being blind to many things. It is quite true that man lives by bread alone -- when there is no bread. But what happens to man's desires when there is plenty of bread and when his belly is chronically filled?

At once other (and 'higher') needs emerge and these, rather than physiological hungers, dominate the organism. And when these in turn are satisfied, again new (and still 'higher') needs emerge and so on. This is what we mean by saying that the basic human needs are organized into a hierarchy of relative prepotency.

One main implication of this phrasing is that gratification becomes as important a concept as deprivation in motivation theory, for it releases the organism from the domination of a relatively more physiological need, permitting thereby the emergence of other more social goals. The physiological needs, along with their partial goals, when chronically gratified cease to exist as active determinants or organizers of behavior. They now exist only in a potential fashion in the sense that they may emerge again to dominate the organism if they are thwarted. But a want that is satisfied is no longer a want. The organism is dominated and its behavior organized only by unsatisfied needs. If hunger is satisfied, it becomes unimportant in the current dynamics of the individual.

This statement is somewhat qualified by a hypothesis to be discussed more fully later, namely that it is precisely those individuals in whom a certain need has always been satisfied who are best equipped to tolerate deprivation of that need in the future, and that furthermore, those who have been de-[p. 376]prived in the past will react differently to current satisfactions than the one who has never been deprived.

The safety needs. -- If the physiological needs are relatively well gratified, there then emerges a new set of needs, which we may categorize roughly as the safety needs. All that has been said of the physiological needs is equally true, although in lesser degree, of these desires. The organism may equally well be wholly dominated by them. They may serve as the almost exclusive organizers of behavior, recruiting all the capacities of the organism in their service, and we may then fairly describe the whole organism as a safety-seeking mechanism. Again we may say of the receptors, the effectors, of the intellect and the other capacities that they are primarily safety-seeking tools. Again, as in the hungry man, we find that the dominating goal is a strong determinant not only of his current world-outlook and philosophy but also of his philosophy of the future. Practically everything looks less important than safety, (even sometimes the physiological needs which being satisfied, are now underestimated). A man, in this state, if it is extreme enough and chronic enough, may be characterized as living almost for safety alone.

Although in this paper we are interested primarily in the needs of the adult, we can approach an understanding of his safety needs perhaps more efficiently by observation of infants and children, in whom these needs are much more simple and obvious. One reason for the clearer appearance of the threat or danger reaction in infants, is that they do not inhibit this reaction at all, whereas adults in our society have been taught to inhibit it at all costs. Thus even when adults do feel their safety to be threatened we may not be able to see this on the surface. Infants will react in a total fashion and as if they were endangered, if they are disturbed or dropped suddenly, startled by loud noises, flashing light, or other unusual sensory stimulation, by rough handling, by general loss of support in the mother's arms, or by inadequate support.[1][p. 377]

In infants we can also see a much more direct reaction to bodily illnesses of various kinds. Sometimes these illnesses seem to be immediately and *per se* threatening and seem to make the child feel unsafe. For instance, vomiting, colic or other sharp pains seem to make the child look at the whole world in a different way. At such a moment of pain, it may be postulated that, for the child, the appearance of the whole world suddenly changes from sunniness to darkness, so to speak, and becomes a place in which anything at all might happen, in which previously stable things have suddenly become unstable. Thus a child who because of some bad food is taken ill may, for a day or two, develop fear, nightmares, and a need for protection and reassurance never seen in him before his illness.

Another indication of the child's need for safety is his preference for some kind of undisrupted routine or rhythm. He seems to want a predictable, orderly world. For instance, injustice, unfairness, or inconsistency in the parents seems to make a child feel anxious and unsafe. This attitude may be not so much because of the injustice *per se* or any particular pains involved, but rather because this treatment threatens to make the world look unreliable, or unsafe, or unpredictable. Young children seem to thrive better under a system which has at least a skeletal outline of rigidity, In which there is a schedule of a kind, some sort of routine, something that can be counted upon, not only for the present but also far into the future. Perhaps one could express this more accurately by saying that the child needs an organized world rather than an unorganized or unstructured one.

The central role of the parents and the normal family setup are indisputable. Quarreling, physical assault, separation, divorce or death within the family may be particularly terrifying. Also parental outbursts of rage or threats of punishment directed to the child, calling him names, speaking to him harshly, shaking him, handling him roughly, or actual [p. 378] physical punishment sometimes elicit such total panic and terror in the child that we must assume more is involved than the physical pain alone. While it is true that in some children this terror may represent also a fear of loss of parental love, it can also occur in completely rejected children, who seem to cling to the hating parents more for sheer safety and protection than because of hope of love.

Confronting the average child with new, unfamiliar, strange, unmanageable stimuli or situations will too frequently elicit the danger or terror reaction, as for example, getting lost or even being separated from the parents for a short time, being confronted with new faces, new situations or new tasks, the sight of strange, unfamiliar or uncontrollable objects, illness or death. Particularly at such times, the child's frantic clinging to his parents is eloquent testimony to their role as protectors (quite apart from their roles as food-givers and love-givers).

From these and similar observations, we may generalize and say that the average child in our society generally prefers a safe, orderly, predictable, organized world, which he can count, on, and in which

unexpected, unmanageable or other dangerous things do not happen, and in which, in any case, he has all-powerful parents who protect and shield him from harm.

That these reactions may so easily be observed in children is in a way a proof of the fact that children in our society, feel too unsafe (or, in a word, are badly brought up). Children who are reared in an unthreatening, loving family do not ordinarily react as we have described above (17). In such children the danger reactions are apt to come mostly to objects or situations that adults too would consider dangerous.[2]

The healthy, normal, fortunate adult in our culture is largely satisfied in his safety needs. The peaceful, smoothly [p. 379] running, 'good' society ordinarily makes its members feel safe enough from wild animals, extremes of temperature, criminals, assault and murder, tyranny, etc. Therefore, in a very real sense, he no longer has any safety needs as active motivators. Just as a sated man no longer feels hungry, a safe man no longer feels endangered. If we wish to see these needs directly and clearly we must turn to neurotic or near-neurotic individuals, and to the economic and social underdogs. In between these extremes, we can perceive the expressions of safety needs only in such phenomena as, for instance, the common preference for a job with tenure and protection, the desire for a savings account, and for insurance of various kinds (medical, dental, unemployment, disability, old age).

Other broader aspects of the attempt to seek safety and stability in the world are seen in the very common preference for familiar rather than unfamiliar things, or for the known rather than the unknown. The tendency to have some religion or world-philosophy that organizes the universe and the men in it into some sort of satisfactorily coherent, meaningful whole is also in part motivated by safety-seeking. Here too we may list science and philosophy in general as partially motivated by the safety needs (we shall see later that there are also other motivations to scientific, philosophical or religious endeavor).

Otherwise the need for safety is seen as an active and dominant mobilizer of the organism's resources only in emergencies, *e. g*., war, disease, natural catastrophes, crime waves, societal disorganization, neurosis, brain injury, chronically bad situation.

Some neurotic adults in our society are, in many ways, like the unsafe child in their desire for safety, although in the former it takes on a somewhat special appearance. Their reaction is often to unknown, psychological dangers in a world that is perceived to be hostile, overwhelming and threatening. Such a person behaves as if a great catastrophe were almost always impending, i.e., he is usually responding as if to an emergency. His safety needs often find specific [p. 380] expression in a search for a protector, or a stronger person on whom he may depend, or perhaps, a Fuehrer.

The neurotic individual may be described in a slightly different way with some usefulness as a grown-up person who retains his childish attitudes toward the world. That is to say, a neurotic adult may be said to behave 'as if' he were actually afraid of a spanking, or of his mother's disapproval, or of being abandoned by his parents, or having his food taken away from him. It is as if his childish attitudes of fear and threat reaction to a dangerous world had gone underground, and untouched by the growing up and learning processes, were now ready to be called out by any stimulus that would make a child feel endangered and threatened.[3]

The neurosis in which the search for safety takes its dearest form is in the compulsive-obsessive neurosis. Compulsive-obsessives try frantically to order and stabilize the world so that no unmanageable, unexpected or unfamiliar dangers will ever appear (14); They hedge themselves about with all sorts of ceremonials, rules and formulas so that every possible contingency may be provided for and so that no new contingencies may appear. They are much like the brain injured cases, described by Goldstein (6), who manage to maintain their equilibrium by avoiding everything unfamiliar and strange and by ordering their restricted world in such a neat, disciplined, orderly fashion that everything in the world can be counted upon. They try to arrange the world so that anything unexpected (dangers) cannot possibly occur. If, through no fault of their own, something unexpected does occur, they go into a panic reaction as if this unexpected occurrence constituted a grave danger. What we can see only as a none-too-strong preference in the healthy person, *e. g*., preference for the familiar, becomes a life-and-death. necessity in abnormal cases.

The love needs. -- If both the physiological and the safety needs are fairly well gratified, then there will emerge the love and affection and belongingness needs, and the whole cycle [p. 381] already described will repeat itself with this new center. Now the person will feel keenly, as never before, the absence of friends, or a sweetheart, or a wife, or children. He will hunger for affectionate relations with people in general, namely, for a place in his group, and he will strive with great intensity to achieve this goal. He will want to attain such a place more than anything else in the world and may even forget that once, when he was hungry, he sneered at love.

In our society the thwarting of these needs is the most commonly found core in cases of maladjustment and more severe psychopathology. Love and affection, as well as their possible expression in sexuality, are generally looked upon with ambivalence and are customarily hedged about with many restrictions and inhibitions. Practically all theorists of psychopathology have stressed thwarting of the love needs as basic in the picture of maladjustment. Many clinical studies have therefore been made of this need and we know more about it perhaps than any of the other needs except the physiological ones (14).

One thing that must be stressed at this point is that love is not synonymous with sex. Sex may be studied as a purely physiological need. Ordinarily sexual behavior is multi-determined, that is to say, determined not only by sexual but also by other needs, chief among which are the love and affection needs. Also not to be overlooked is the fact that the love needs involve both giving *and* receiving love.[4]

The esteem needs. -- All people in our society (with a few pathological exceptions) have a need or desire for a stable, firmly based, (usually) high evaluation of themselves, for self-respect, or self-esteem, and for the esteem of others. By firmly based self-esteem, we mean that which is soundly based upon real capacity, achievement and respect from others. These needs may be classified into two subsidiary sets. These are, first, the desire for strength, for achievement, for adequacy, for confidence in the face of the world, and for independence and freedom.[5] Secondly, we have what [p. 382] we may call the desire for reputation or prestige (defining it as respect or esteem from other people), recognition, attention, importance or appreciation.[6] These needs have been relatively stressed by Alfred Adler and his followers, and have been relatively neglected by Freud and the psychoanalysts. More and more today however there is appearing widespread appreciation of their central importance.

Satisfaction of the self-esteem need leads to feelings of self-confidence, worth, strength, capability and adequacy of being useful and necessary in the world. But thwarting of these needs produces feelings of inferiority, of weakness and of helplessness. These feelings in turn give rise to either basic discouragement or else compensatory or neurotic trends. An appreciation of the necessity of basic self-

confidence and an understanding of how helpless people are without it, can be easily gained from a study of severe traumatic neurosis (8).[7]

The need for self-actualization. -- Even if all these needs are satisfied, we may still often (if not always) expect that a new discontent and restlessness will soon develop, unless the individual is doing what he is fitted for. A musician must make music, an artist must paint, a poet must write, if he is to be ultimately happy. What a man *can* be, he *must* be. This need we may call self-actualization.

This term, first coined by Kurt Goldstein, is being used in this paper in a much more specific and limited fashion. It refers to the desire for self-fulfillment, namely, to the tendency for him to become actualized in what he is potentially. This tendency might be phrased as the desire to become more and more what one is, to become everything that one is capable of becoming.[p. 383]

The specific form that these needs will take will of course vary greatly from person to person. In one individual it may take the form of the desire to be an ideal mother, in another it may be expressed athletically, and in still another it may be expressed in painting pictures or in inventions. It is not necessarily a creative urge although in people who have any capacities for creation it will take this form.

The clear emergence of these needs rests upon prior satisfaction of the physiological, safety, love and esteem needs. We shall call people who are satisfied in these needs, basically satisfied people, and it is from these that we may expect the fullest (and healthiest) creativeness.[8] Since, in our society, basically satisfied people are the exception, we do not know much about self-actualization, either experimentally or clinically. It remains a challenging problem for research.

The preconditions for the basic need satisfactions. -- There are certain conditions which are immediate prerequisites for the basic need satisfactions. Danger to these is reacted to almost as if it were a direct danger to the basic needs themselves. Such conditions as freedom to speak, freedom to do what one wishes so long as no harm is done to others, freedom to express one's self, freedom to investigate and seek for information, freedom to defend one's self, justice, fairness, honesty, orderliness in the group are examples of such preconditions for basic need satisfactions. Thwarting in these freedoms will be reacted to with a threat or emergency response. These conditions are not ends in themselves but they are *almost* so since they are so closely related to the basic needs, which are apparently the only ends in themselves. These conditions are defended because without them the basic satisfactions are quite impossible, or at least, very severely endangered.[p. 384]

If we remember that the cognitive capacities (perceptual, intellectual, learning) are a set of adjustive tools, which have, among other functions, that of satisfaction of our basic needs, then it is clear that any danger to them, any deprivation or blocking of their free use, must also be indirectly threatening to the basic needs themselves. Such a statement is a partial solution of the general problems of curiosity, the search for knowledge, truth and wisdom, and the ever-persistent urge to solve the cosmic mysteries.

We must therefore introduce another hypothesis and speak of degrees of closeness to the basic needs, for we have already pointed out that *any* conscious desires (partial goals) are more or less important as they are more or less close to the basic needs. The same statement may be made for various behavior acts. An act is psychologically important if it contributes directly to satisfaction of basic needs. The less directly it so contributes, or the weaker this contribution is, the less important this act must be conceived to be from the point of view of dynamic psychology. A similar statement may be made for the

various defense or coping mechanisms. Some are very directly related to the protection or attainment of the basic needs, others are only weakly and distantly related. Indeed if we wished, we could speak of more basic and less basic defense mechanisms, and then affirm that danger to the more basic defenses is more threatening than danger to less basic defenses (always remembering that this is so only because of their relationship to the basic needs).

The desires to know and to understand. So far, we have mentioned the cognitive needs only in passing. Acquiring knowledge and systematizing the universe have been considered as, in part, techniques for the achievement of basic safety in the world, or, for the intelligent man, expressions of self-actualization. Also freedom of inquiry and expression has been discussed as preconditions of satisfactions of the basic needs. True though these formulations may be, they do not constitute definitive answers to the question as to the motivation role of curiosity, learning, philosophizing, experimenting, etc. They are, at best, no more than partial answers.[p. 385]

This question is especially difficult because we know so little about the facts. Curiosity, exploration, desire for the facts, desire to know may certainly be observed easily enough. The fact that they often are pursued even at great cost to the individual's safety is an earnest of the partial character of our previous discussion. In addition, the writer must admit that, though he has sufficient clinical evidence to postulate the desire to know as a very strong drive in intelligent people, no data are available for unintelligent people. It may then be largely a function of relatively high intelligence. Rather tentatively, then, and largely in the hope of stimulating discussion and research, we shall postulate a basic desire to know, to be aware of reality, to get the facts, to satisfy curiosity, or as Wertheimer phrases it, to see rather than to be blind.

This postulation, however, is not enough. Even after we know, we are impelled to know more and more minutely and microscopically on the one hand, and on the other, more and more extensively in the direction of a world philosophy, religion, etc. The facts that we acquire, if they are isolated or atomistic, inevitably get theorized about, and either analyzed or organized or both. This process has been phrased by some as the search for 'meaning.' We shall then postulate a desire to understand, to systematize, to organize, to analyze, to look for relations and meanings.

Once these desires are accepted for discussion, we see that they too form themselves into a small hierarchy in which the desire to know is prepotent over the desire to understand. All the characteristics of a hierarchy of prepotency that we have described above, seem to hold for this one as well.

We must guard ourselves against the too easy tendency to separate these desires from the basic needs we have discussed above, *i.e.*, to make a sharp dichotomy between 'cognitive' and 'conative' needs. The desire to know and to understand are themselves conative, i.e., have a striving character, and are as much personality needs as the 'basic needs' we have already discussed (19).[p. 386]

III. FURTHER CHARACTERISTICS OF THE BASIC NEEDS

The degree of fixity of the hierarchy of basic needs. We have spoken so far as if this hierarchy were a fixed order but actually it is not nearly as rigid as we may have implied. It is true that most of the people with whom we have worked have seemed to have these basic needs in about the order that has been indicated. However, there have been a number of exceptions.

(1) There are some people in whom, for instance, self-esteem seems to be more important than love. This most common reversal in the hierarchy is usually due to the development of the notion that the person who is most likely to be loved is a strong or powerful person, one who inspires respect or fear, and who is self-confident or aggressive. Therefore such people who lack love and seek it, may try hard to put on a front of aggressive, confident behavior. But essentially they seek high self-esteem and its behavior expressions more as a means-to-an-end than for its own sake; they seek self-assertion for the sake of love rather than for self-esteem itself.

(2) There are other, apparently innately creative people in whom the drive to creativeness seems to be more important than any other counter-determinant. Their creativeness might appear not as self-actualization released by basic satisfaction, but in spite of lack of basic satisfaction.

(3) In certain people the level of aspiration may be permanently deadened or lowered. That is to say, the less pre-potent goals may simply be lost, and may disappear forever, so that the person who has experienced life at a very low level, *i. e*., chronic unemployment, may continue to be satisfied for the rest of his life if only he can get enough food.

(4) The so-called 'psychopathic personality' is another example of permanent loss of the love needs. These are people who, according to the best data available (9), have been starved for love in the earliest months of their lives and have simply lost forever the desire and the ability to give and to receive affection (as animals lose sucking or pecking reflexes that are not exercised soon enough after birth).[p. 387]

(5) Another cause of reversal of the hierarchy is that when a need has been satisfied for a long time, this need may be under-evaluated. People who have never experienced chronic hunger are apt to underestimate its effects and to look upon food as a rather unimportant thing. If they are dominated by a higher need, this higher need will seem to be the most important of all. It then becomes possible, and indeed does actually happen, that they may, for the sake of this higher need, put themselves into the position of being deprived in a more basic need. We may expect that after a long-time deprivation of the more basic need there will be a tendency to reevaluate both needs so that the more pre-potent need will actually become consciously prepotent for the individual who may have given it up very lightly. Thus, a man who has given up his job rather than lose his self-respect, and who then starves for six months or so, may be willing to take his job back even at the price of losing his a self-respect.

(6) Another partial explanation of *apparent* reversals is seen in the fact that we have been talking about the hierarchy of prepotency in terms of consciously felt wants or desires rather than of behavior. Looking at behavior itself may give us the wrong impression. What we have claimed is that the person will want the more basic of two needs when deprived in both. There is no necessary implication here that he will act upon his desires. Let us say again that there are many determinants of behavior other than the needs and desires.

(7) Perhaps more important than all these exceptions are the ones that involve ideals, high social standards, high values and the like. With such values people become martyrs; they give up everything for the sake of a particular ideal, or value. These people may be understood, at least in part, by reference to one basic concept (or hypothesis) which may be called 'increased frustration-tolerance through early gratification'. People who have been satisfied in their basic needs throughout their lives, particularly in their earlier years, seem to develop exceptional power to withstand present or future thwarting of these needs simply because they have strong,[p. 388] healthy character structure as a

result of basic satisfaction. They are the 'strong' people who can easily weather disagreement or opposition, who can swim against the stream of public opinion and who can stand up for the truth at great personal cost. It is just the ones who have loved and been well loved, and who have had many deep friendships who can hold out against hatred, rejection or persecution.

I say all this in spite of the fact that there is a certain amount of sheer habituation which is also involved in any full discussion of frustration tolerance. For instance, it is likely that those persons who have been accustomed to relative starvation for a long time, are partially enabled thereby to withstand food deprivation. What sort of balance must be made between these two tendencies, of habituation on the one hand, and of past satisfaction breeding present frustration tolerance on the other hand, remains to be worked out by further research. Meanwhile we may assume that they are both operative, side by side, since they do not contradict each other, In respect to this phenomenon of increased frustration tolerance, it seems probable that the most important gratifications come in the first two years of life. That is to say, people who have been made secure and strong in the earliest years, tend to remain secure and strong thereafter in the face of whatever threatens.

Degree of relative satisfaction. -- So far, our theoretical discussion may have given the impression that these five sets of needs are somehow in a step-wise, all-or-none relationships to each other. We have spoken in such terms as the following: "If one need is satisfied, then another emerges." This statement might give the false impression that a need must be satisfied 100 per cent before the next need emerges. In actual fact, most members of our society who are normal, are partially satisfied in all their basic needs and partially unsatisfied in all their basic needs at the same time. A more realistic description of the hierarchy would be in terms of decreasing percentages of satisfaction as we go up the hierarchy of prepotency, For instance, if I may assign arbitrary figures for the sake of illustration, it is as if the average citizen [p. 389] is satisfied perhaps 85 per cent in his physiological needs, 70 per cent in his safety needs, 50 per cent in his love needs, 40 per cent in his self-esteem needs, and 10 per cent in his self-actualization needs.

As for the concept of emergence of a new need after satisfaction of the prepotent need, this emergence is not a sudden, saltatory phenomenon but rather a gradual emergence by slow degrees from nothingness. For instance, if prepotent need A is satisfied only 10 per cent: then need B may not be visible at all. However, as this need A becomes satisfied 25 per cent, need B may emerge 5 per cent, as need A becomes satisfied 75 per cent need B may emerge go per cent, and so on.

Unconscious character of needs. These needs are neither necessarily conscious nor unconscious. On the whole, however, in the average person, they are more often unconscious rather than conscious. It is not necessary at this point to overhaul the tremendous mass of evidence which indicates the crucial importance of unconscious motivation. It would by now be expected, on a priori grounds alone, that unconscious motivations would on the whole be rather more important than the conscious motivations. What we have called the basic needs are very often largely unconscious although they may, with suitable techniques, and with sophisticated people become conscious.

Cultural specificity and generality of needs. This classification of basic needs makes some attempt to take account of the relative unity behind the superficial differences in specific desires from one culture to another. Certainly in any particular culture an individual's conscious motivational content will usually be extremely different from the conscious motivational content of an individual in another society. However, it is the common experience of anthropologists that people, even in different societies, are much more alike than we would think from our first contact with them, and that as we know them

better we seem to find more and more of this commonness, We then recognize the most startling differences to be superficial rather than basic, *e. g*., differences in style of hair-dress, clothes, tastes in food, etc. Our classification of basic [p. 390] needs is in part an attempt to account for this unity behind the apparent diversity from culture to culture. No claim is made that it is ultimate or universal for all cultures. The claim is made only that it is relatively *more* ultimate, more universal, more basic, than the superficial conscious desires from culture to culture, and makes a somewhat closer approach to common-human characteristics, Basic needs are *more* common-human than superficial desires or behaviors.

Multiple motivations of behavior. These needs must be understood not to be *exclusive* or single determiners of certain kinds of behavior. An example may be found in any behavior that seems to be physiologically motivated, such as eating, or sexual play or the like. The clinical psychologists have long since found that any behavior may be a channel through which flow various determinants. Or to say it in another way, most behavior is multi-motivated. Within the sphere of motivational determinants any behavior tends to be determined by several or *all* of the basic needs simultaneously rather than by only one of them. The latter would be more an exception than the former. Eating may be partially for the sake of filling the stomach, and partially for the sake of comfort and amelioration of other needs. One may make love not only for pure sexual release, but also to convince one's self of one's masculinity, or to make a conquest, to feel powerful, or to win more basic affection. As an illustration, I may point out that it would be possible (theoretically if not practically) to analyze a single act of an individual and see in it the expression of his physiological needs, his safety needs, his love needs, his esteem needs and self-actualization. This contrasts sharply with the more naive brand of trait psychology in which one trait or one motive accounts for a certain kind of act, *i. e*., an aggressive act is traced solely to a trait of aggressiveness.

Multiple determinants of behavior. Not all behavior is determined by the basic needs. We might even say that not all behavior is motivated. There are many determinants of behavior other than motives. [9] For instance, one other important class of determinants is the so-called 'field' determinants [p. 391]. Theoretically, at least, behavior may be determined completely by the field, or even by specific isolated external stimuli, as in association of ideas, or certain conditioned reflexes. If in response to the stimulus word 'table' I immediately perceive a memory image of a table, this response certainly has nothing to do with my basic needs.

Secondly, we may call attention again to the concept of 'degree of closeness to the basic needs' or 'degree of motivation.' Some behavior is highly motivated, other behavior is only weakly motivated. Some is not motivated at all (but all behavior is determined).

Another important point [10] is that there is a basic difference between expressive behavior and coping behavior (functional striving, purposive goal seeking). An expressive behavior does not try to do anything; it is simply a reflection of the personality. A stupid man behaves stupidly, not because he wants to, or tries to, or is motivated to, but simply because he is what he is. The same is true when I speak in a bass voice rather than tenor or soprano. The random movements of a healthy child, the smile on the face of a happy man even when he is alone, the springiness of the healthy man's walk, and the erectness of his carriage are other examples of expressive, non-functional behavior. Also the *style* in which a man carries out almost all his behavior, motivated as well as unmotivated, is often expressive.

We may then ask, is *all* behavior expressive or reflective of the character structure? The answer is 'No.' Rote, habitual, automatized, or conventional behavior may or may not be expressive. The same is true

for most 'stimulus-bound' behaviors. It is finally necessary to stress that expressiveness of behavior, and goal-directedness of behavior are not mutually exclusive categories. Average behavior is usually both.

Goals as centering principle in motivation theory. It will be observed that the basic principle in our classification has [p. 392] been neither the instigation nor the motivated behavior but rather the functions, effects, purposes, or goals of the behavior. It has been proven sufficiently by various people that this is the most suitable point for centering in any motivation theory.[11]

Animal- and human-centering. This theory starts with the human being rather than any lower and presumably 'simpler' animal. Too many of the findings that have been made in animals have been proven to be true for animals but not for the human being. There is no reason whatsoever why we should start with animals in order to study human motivation. The logic or rather illogic behind this general fallacy of 'pseudo-simplicity' has been exposed often enough by philosophers and logicians as well as by scientists in each of the various fields. It is no more necessary to study animals before one can study man than it is to study mathematics before one can study geology or psychology or biology.

We may also reject the old, naive, behaviorism which assumed that it was somehow necessary, or at least more 'scientific' to judge human beings by animal standards. One consequence of this belief was that the whole notion of purpose and goal was excluded from motivational psychology simply because one could not ask a white rat about his purposes. Tolman (18) has long since proven in animal studies themselves that this exclusion was not necessary.

Motivation and the theory of psychopathogenesis. The conscious motivational content of everyday life has, according to the foregoing, been conceived to be relatively important or unimportant accordingly as it is more or less closely related to the basic goals. A desire for an ice cream cone might actually be an indirect expression of a desire for love. If it is, then this desire for the ice cream cone becomes extremely important motivation. If however the ice cream is simply something to cool the mouth with, or a casual appetitive reaction, then the desire is relatively unimportant. Everyday conscious desires are to be regarded as symptoms, as [p. 393] *surface indicators of more basic needs*. If we were to take these superficial desires at their face value me would find ourselves in a state of complete confusion which could never be resolved, since we would be dealing seriously with symptoms rather than with what lay behind the symptoms.

Thwarting of unimportant desires produces no psychopathological results; thwarting of a basically important need does produce such results. Any theory of psychopathogenesis must then be based on a sound theory of motivation. A conflict or a frustration is not necessarily pathogenic. It becomes so only when it threatens or thwarts the basic needs, or partial needs that are closely related to the basic needs (10).

The role of gratified needs. -- It has been pointed out above several times that our needs usually emerge only when more prepotent needs have been gratified. Thus gratification has an important role in motivation theory. Apart from this, however, needs cease to play an active determining or organizing role as soon as they are gratified.

What this means is that, *e. g.*, a basically satisfied person no longer has the needs for esteem, love, safety, etc. The only sense in which he might be said to have them is in the almost metaphysical sense that a sated man has hunger, or a filled bottle has emptiness. If we are interested in what *actually*

motivates us, and not in what has, will, or might motivate us, then a satisfied need is not a motivator. It must be considered for all practical purposes simply not to exist, to have disappeared. This point should be emphasized because it has been either overlooked or contradicted in every theory of motivation I know.[12] The perfectly healthy, normal, fortunate man has no sex needs or hunger needs, or needs for safety, or for love, or for prestige, or self-esteem, except in stray moments of quickly passing threat. If we were to say otherwise, we should also have to aver that every man had all the pathological reflexes, *e. g*., Babinski, etc., because if his nervous system were damaged, these would appear.

It is such considerations as these that suggest the bold [p. 394] postulation that a man who is thwarted in any of his basic needs may fairly be envisaged simply as a sick man. This is a fair parallel to our designation as 'sick' of the man who lacks vitamins or minerals. Who is to say that a lack of love is less important than a lack of vitamins? Since we know the pathogenic effects of love starvation, who is to say that we are invoking value-questions in an unscientific or illegitimate way, any more than the physician does who diagnoses and treats pellagra or scurvy? If I were permitted this usage, I should then say simply that a healthy man is primarily motivated by his needs to develop and actualize his fullest potentialities and capacities. If a man has any other basic needs in any active, chronic sense, then he is simply an unhealthy man. He is as surely sick as if he had suddenly developed a strong salt-hunger or calcium hunger.[13]

If this statement seems unusual or paradoxical the reader may be assured that this is only one among many such paradoxes that will appear as we revise our ways of looking at man's deeper motivations. When we ask what man wants of life, we deal with his very essence.

IV. SUMMARY

(1) There are at least five sets of goals, which we may call basic needs. These are briefly physiological, safety, love, 'esteem, and self-actualization. In addition, we are motivated by the desire to achieve or maintain the various conditions upon which these basic satisfactions rest and by certain more intellectual desires.

(2) These basic goals are related to each other, being arranged in a hierarchy of prepotency. This means that the most prepotent goal will monopolize consciousness and will tend of itself to organize the recruitment of the various capacities of the organism. The less prepotent needs are [p. 395] minimized, even forgotten or denied. But when a need is fairly well satisfied, the next prepotent ('higher') need emerges, in turn to dominate the conscious life and to serve as the center of organization of behavior, since gratified needs are not active motivators.

Thus man is a perpetually wanting animal. Ordinarily the satisfaction of these wants is not altogether mutually exclusive, but only tends to be. The average member of our society is most often partially satisfied and partially unsatisfied in all of his wants. The hierarchy principle is usually empirically observed in terms of increasing percentages of non-satisfaction as we go up the hierarchy. Reversals of the average order of the hierarchy are sometimes observed. Also it has been observed that an individual may permanently lose the higher wants in the hierarchy under special conditions. There are not only ordinarily multiple motivations for usual behavior, but in addition many determinants other than motives.

(3) Any thwarting or possibility of thwarting of these basic human goals, or danger to the defenses which protect them, or to the conditions upon which they rest, is considered to be a psychological threat. With a few exceptions, all psychopathology may be partially traced to such threats. A basically thwarted man may actually be defined as a 'sick' man, if we wish.

(4) It is such basic threats which bring about the general emergency reactions.

(5) Certain other basic problems have not been dealt with because of limitations of space. Among these are (*a*) the problem of values in any definitive motivation theory, (*b*) the relation between appetites, desires, needs and what is 'good' for the organism, (*c*) the etiology of the basic needs and their possible derivation in early childhood, (*d*) redefinition of motivational concepts, *i. e*., drive, desire, wish, need, goal, (*e*) implication of our theory for hedonistic theory, (*f*) the nature of the uncompleted act, of success and failure, and of aspiration-level, (*g*) the role of association, habit and conditioning, (*h*) relation to the [p. 396] theory of inter-personal relations, (*i*) implications for psychotherapy, (*j*) implication for theory of society, (k) the theory of selfishness, (*l*) the relation between needs and cultural patterns, (*m*) the relation between this theory and Alport's theory of functional autonomy. These as well as certain other less important questions must be considered as motivation theory attempts to become definitive.

Notes

[1] As the child grows up, sheer knowledge and familiarity as well as better motor development make these 'dangers' less and less dangerous and more and more manageable. Throughout life it may be said that one of the main conative functions of education is this neutralizing of apparent dangers through knowledge, *e. g*., I am not afraid of thunder because I know something about it.

[2] A 'test battery' for safety might be confronting the child with a small exploding firecracker, or with a bewhiskered face; having the mother leave the room, putting him upon a high ladder, a hypodermic injection, having a mouse crawl up to him, etc. Of course I cannot seriously recommend the deliberate use of such 'tests' for they might very well harm the child being tested. But these and similar situations come up by the score in the child's ordinary day-to-day living and may be observed. There is no reason why those stimuli should not be used with, for example, young chimpanzees.

[3] Not all neurotic individuals feel unsafe. Neurosis may have at its core a thwarting of the affection and esteem needs in a person who is generally safe.

[4] For further details see (12) and (16, Chap. 5).

[5] Whether or not this particular desire is universal we do not know. The crucial question, especially important today, is "Will men who are enslaved and dominated inevitably feel dissatisfied and rebellious?" We may assume on the basis of commonly known clinical data that a man who has known true freedom (not paid for by giving up safety and security but rather built on the basis of adequate safety and security) will not willingly or easily allow his freedom to be taken away from him. But we do not know that this is true for the person born into slavery. The events of the next decade should give us our answer. See discussion of this problem in (5).

[6] Perhaps the desire for prestige and respect from others is subsidiary to the desire for self-esteem or confidence in oneself. Observation of children seems to indicate that this is so, but clinical data give no clear support for such a conclusion.

[7] For more extensive discussion of normal self-esteem, as well as for reports of various researches, see (11).

[8] Clearly creative behavior, like painting, is like any other behavior in having multiple, determinants. It may be seen in 'innately creative' people whether they are satisfied or not, happy or unhappy, hungry or sated. Also it is clear that creative activity may be compensatory, ameliorative or purely economic. It is my impression (as yet unconfirmed) that it is possible to distinguish the artistic and intellectual products of basically satisfied people from those of basically unsatisfied people by inspection alone. In any case, here too we must distinguish, in a dynamic fashion, the overt behavior itself from its various motivations or purposes.

[9] I am aware that many psychologists md psychoanalysts use the term 'motivated' and 'determined' synonymously, *e. g.*, Freud. But I consider this an obfuscating usage. Sharp distinctions are necessary for clarity of thought, and precision in experimentation.

[10] To be discussed fully in a subsequent publication.

[11] The interested reader is referred to the very excellent discussion of this point in Murray's *Explorations in Personality* (15).

[12] Note that acceptance of this theory necessitates basic revision of the Freudian theory.

[13] If we were to use the word 'sick' in this way, we should then also have to face squarely the relations of man to his society. One clear implication of our definition would be that (1) since a man is to be called sick who is basically thwarted, and (2) since such basic thwarting is made possible ultimately only by forces outside the individual, then (3) sickness in the individual must come ultimately from sickness in the society. The 'good' or healthy society would then be defined as one that permitted man's highest purposes to emerge by satisfying all his prepotent basic needs.

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CHAPTER 12

Information Processing Theory

INTRODUCTION

Information Processing Theory is concerned with how people view their environment, how they put that information into memory, and how they retrieve that information later on. The Information Processing Theory approach is based on the idea that humans process information they receive instead of simply responding to external stimuli. According to the Information Processing Theory, the mind is often compared to a computer. The computer, like mind, analyzes information and determines how the information will be stored. There are three components of the Information Processing Theory: sensory memory, working memory, and long term memory. Sensory memory is all of the things that you experience through your five senses - hearing, vision, taste, smell, and touch. The capacity of sensory memory is great but the duration is very limited. Working memory is short term, often just seconds long, and includes the thinking part of applying what came out of the sensory memory. Long term memory is memory that can be accessed at a much later time, and is much longer lasting and can hold more information than working memory. The Information Processing Theory addresses how people respond to the information they received through their senses and how they further process those information with steps of attention, forgetting, and retention. Unlike other cognitive developmental theories, the information processing theory includes a continuous pattern of development, instead of development in stages.

SELECTED READING

Source: Schraw, G., & McCrudden, M. (n. d.) Information processing theory. Retrieved from http://www.education.com/reference/article/information-processing-theory/

Humans process information with amazing efficiency and often perform better than highly sophisticated machines at tasks such as problem solving and critical thinking (Halpern, 2003; Kuhn, 1999). Yet despite the remarkable capabilities of the human mind, it was not until the 20th century that researchers developed systematic models of memory, cognition, and thinking. The best articulated and most heavily researched model is the information processing model (IPM), developed in the early 1950s.

The IPM consists of three main components, sensory memory, working memory, and long-term memory (see Figure 1). Sensory and working memory enable people to manage limited amounts of incoming information during initial processing, whereas long-term memory serves as a permanent repository for knowledge. In this entry, the information processing model will be used as a metaphor for successful learning because it is well supported by research and provides a well-articulated means for describing the main cognitive structures (i.e., memory systems) and processes (i.e., strategies) in the learning cycle.

SENSORY MEMORY

Sensory memory processes incoming sensory information for very brief periods of time, usually on the order of 1/2 to 3 seconds. The amount of information held at any given moment in sensory memory is

limited to five to seven discrete elements such as letters of the alphabet or pictures of human faces. Thus, if a person viewed 10 letters simultaneously for 1 second, it is unlikely that more than five to seven of those letters would be remembered.

The main purpose of sensory memory is to screen incoming stimuli and process only those stimuli that are most relevant at the present time. For example, drivers on a busy freeway in heavy traffic are constantly bombarded with visual and auditory stimuli. To maximize efficiency and safety, they process only information that is relevant to safe driving. Thus, they would attend to road conditions but not buildings they pass as they drive. Similarly, they would attend to sounds of other cars, but not to music from the radio or one passenger's casual conversation with another.

Researchers agree that information processing in sensory memory usually occurs too quickly for people to consciously control what they attend to. Rather, attention allocation and sensory processing are fast and unconscious. Information that is relevant to the task at hand, and information that is familiar and therefore subject to automatic processing, are the most likely types of information to be processed in sensory memory and forwarded to the working memory buffer. Information that is highly relevant may receive some degree of controlled, conscious processing if it is crucial to a task (e.g., attending to salient information such as animals along the road while driving at high speed). However, controlled processing in sensory memory would be likely further to reduce the limited amount of information that can be processed at any given moment.

WORKING MEMORY

After stimuli enter sensory memory, they are either forwarded to working memory or deleted from the system. Working memory is a term that is used to refer to a multi-component temporary memory system in which information is assigned meaning, linked to other information, and essential mental operations such as inferences are performed. A number of different models of working memory have been proposed (Shah & Miyake, 1999). However, the three-component model developed by Baddeley (1998, 2001) is the most common, and will be discussed shortly.

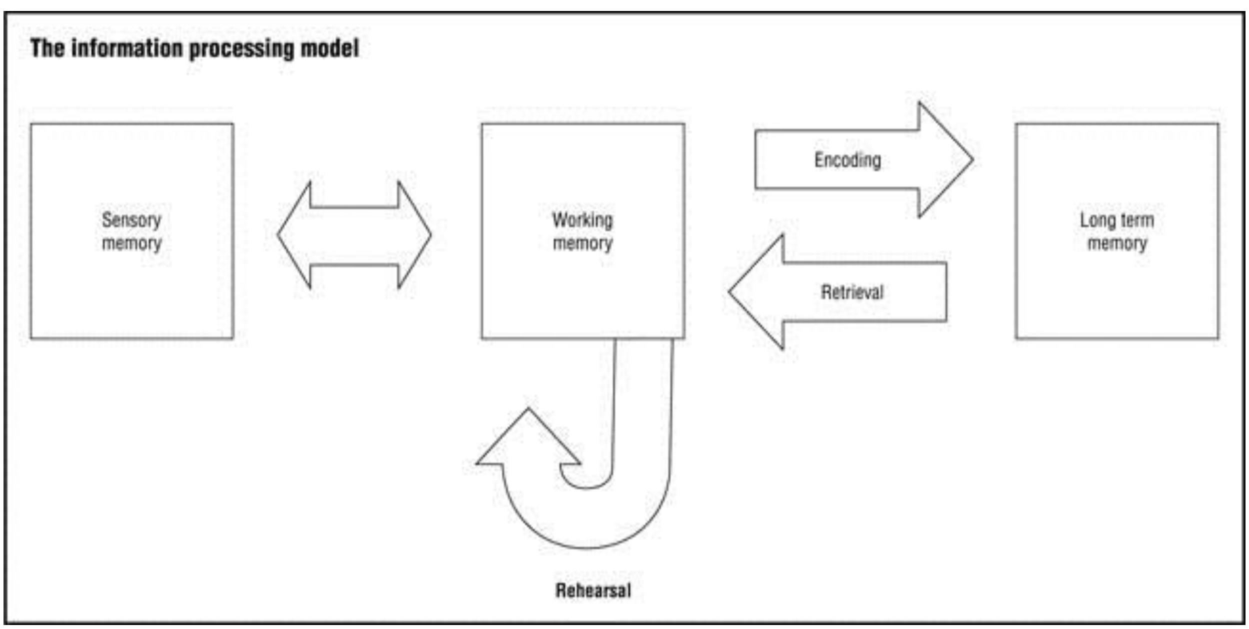


*Figure 1*ILLUSTRATION BY GGS INFORMATION SERVICES. CENGAGE LEARNING, GALE.

Several useful terms have been developed to describe efficient cognitive processing in working memory. One term is *limited attentional resources*, which refers to the highly limited nature of information processing (Anderson, 2000; Neath, 1998). All individuals experience severe limitations in how much mental activity they can engage in due to limited cognitive resources (Kane & Engle, 2002). Although humans differ with respect to available cognitive resources, all learners experience severe limitations regardless of their skill and ability level. Often, differences between one learner and another are not due to the amount of resources, but how efficiently those resources are used.

Another key term is *automaticity*, which refers to being able to perform a task very quickly and efficiently due to repeated practice (Stanovich, 2003). Automated activities usually require few cognitive resources; thus, even a complex skill such as driving a car at 75 miles per hour can seem effortless. Effective information processing in sensory memory requires a high degree of automaticity with regard to recognition of familiar stimuli such as spoken or printed words, faces, and sounds.

A third key term is *selective processing*, which refers to the act of intentionally focusing one's limited cognitive resources on stimuli that are most relevant to the task at hand. For example, when driving in snow, one might allocate more of one's limited cognitive resources to watching the center line in the highway than one would allocate on a clear summer day. In contrast, on an extremely windy day, one would pay little attention to the whereabouts of the center line but pay special attention to any flying debris that could cause an accident. In essence, selective processing enables learners to be optimally efficient by putting all of their cognitive eggs in one basket. It is no coincidence that highly effective learners succeed because they identify what is most important to learn and allocate limited attention to relevant information.

Baddeley's 2001 model of working memory consists of three components, the *executive control system, articulatory loop, and visual-spatial sketch pad*. The role of the executive control system is to select incoming information, determine how to best process that information, construct meaning through organization and inferences, and subsequently transfer the processed information to long-term memory or choose to delete that information from the memory system altogether (e.g., a telephone number that is no longer needed). Most models of working memory assume that the central executive is the place where humans "make conscious meaning" of the information they process (Shah & Miyake, 1999). The role of the articulatory loop is to maintain and further process verbal information. The role of the visual-spatial sketch pad is analogous to the articulatory loop in that it maintains and further processes non-verbal and visual information. Information is lost quickly from working memory (i.e., 5 to 15 seconds) unless some type of mental rehearsal occurs. Barring rehearsal (e.g., repeating a telephone number), information is either forwarded to long-term memory or is deleted from the system.

Baddeley's model makes several critical assumptions about the processing of information in working memory. One is that each of the three subsystems possesses its own pool of limited cognitive resources. This means that, under normal information processing circumstances, each subsystem performs work without taxing the other subsystems. A second assumption is that the executive control system regulates the articulatory loop and visual-spatial sketch pad.

Table 1. ILLUSTRATION BY GGS INFORMATION SERVICES. CENGAGE LEARNING, GALE.

A comparison of sensory, working, and long term memory

Type of memory	Purpose	Capacity	Duration of retention
Sensory memory	Provides initial screening and processing of incoming stimuli.	3 to 7 discrete units	0.5 to 3 seconds
Working memory	Assigns meaning to stimuli and links individual pieces of information into larger units. Enables learner to construct meaning and perform visual-spatial mental operations.	7 to 9 units of information	5 to 15 seconds without rehearsal
Long term memory	Provides a permanent repository for different types knowledge	Infinite	Permanent

LONG-TERM MEMORY

Unlike sensory and working memory, long-term memory is not constrained by capacity or duration of attention limitations. The role of long-term memory is to provide a seemingly unlimited repository for all the facts and knowledge in memory. Most researchers believe that long-term memory is capable of holding millions of pieces of information for very long periods of time (Anderson, 2000). A great deal of research has gone into identifying two key aspects of long-term memory: (a) what types of information are represented, and (b) how information is organized. These two questions are addressed in the next section of this entry. For present purposes, there is universal agreement that qualitatively different types of information exist in long-term memory and that information must be organized, and therefore quickly accessible, to be of practical use to learners.

Figure 1 shows that working memory and long-term memory are connected by *encoding* and *retrieval* processes. Encoding refers to a large number of strategies that move information from temporary store in working memory into long-term memory. Examples include organization, inference, and elaboration strategies, which will be discussed later. Retrieval refers to processes that enable individuals to search memory and access information for active processing in working memory. Both encoding and retrieval greatly facilitate learning when information in long-term memory is organized for easy access.

A comparison of the three components of the IPM indicates that both sensory and working memory are relatively short term in nature (see Table 1). Their main roles are to screen incoming information, assign meaning, and relate individual units of information to other units. In contrast, the main role of long-term memory is to serve as a highly organized permanent storage system. Sensory and working memory process few pieces of information within a short time frame. Automaticity of processing and selective allocation of limited cognitive resources greatly increases the efficiency of information processing. Long-term memory is assumed to be more or less permanent and unlimited in terms of capacity. The main processing constraint on long-term memory is the individual's ability to quickly encode and retrieve information using an efficient organizational system.

The information processing model provides a conceptual model which explains the different functions and constraints on human memory. The IPM also has had a major impact on instructional theory and practice. Sweller and Chandler's 1994 work developed *cognitive load theory* to explain how different instructional and learner constraints affect optimal information processing. The crux of their argument is that each task imposes some degree of cognitive load, which must be met either by available cognitive resources or learner-based strategies such as selective attention and automaticity. Reducing cognitive load enables individuals to learn with less overall mental effort. Cognitive load theory has been

especially helpful in terms of planning instruction and developing learning materials. Others researchers such as Mayer and Moreno (2003) have developed frameworks to increase learning by systematically reducing cognitive load through better design of learning materials and more strategic use of limited resources by students.

In summary, the information processing model postulates a three-component model of information processing. The IPM is consistent with empirical findings and provides an excellent framework for understanding principles of effective learning, which are considered later in this entry. Sensory and working memory are limited with respect to capacity and duration, whereas long-term memory is more or less unlimited. Information processing efficiency is increased due to automaticity and selectivity. Encoding and retrieval of information in long-term memory is increased due to efficient organizational strategies.

IMPLICATIONS FOR INSTRUCTION

The information processing model provides four important implications for improving learning and instruction. The first is that memory stores are extremely limited in both sensory and working memory. The two main strategies that effective learners use to cope with limited capacity are selectively focusing their attention on important information and engaging in as much automated processing as possible. From an educational perspective, it is essential for students to become automated at basic skills such as letter and word decoding, number recognition, and simple procedural skills such as handwriting, multiplication, and spelling. Automaticity makes available limited processing resources that can be used to engage in labor intensive self-regulation (Butler & Winne, 1995; Zeidner, Boekaerts, & Pintrich, 2000; Zimmerman, 2000) and comprehension monitoring (Schraw, 2001; Sternberg, 2001).

A second implication is that relevant prior knowledge facilitates encoding and retrieval processes. Highly effective learners possess a great deal of organized knowledge within a particular domain such as reading, mathematics, or science. They also possess general problem-solving and critical-thinking scripts that enable them to perform well across different domains. This knowledge guides information processing in sensory and working memory by providing easy-to-access retrieval structures in memory. It also serves as the basis for the development of expertise (Alexander, 2003; Ericsson, 2003). Thus, helping students use their prior knowledge when learning new information promotes learning.

A third implication is that automated information processing increases cognitive efficiency by reducing information processing demands. As discussed earlier, automaticity is an important aspect of effective learning for two reasons. One is that being automated makes it easier selectively to allocate limited resources to information that is most relevant to the task at hand. Unfortunately, there is no easy road to automaticity other than sustained, regular practice. In addition, automaticity frees limited resources that can be used for other activities such as drawing inferences and connecting new information to existing information in memory.

A fourth implication is that learning strategies improve information processing because learners are more efficient and process information at a deeper level (Pressley & Harris, 2006; Pressley & McDonald-Wharton, 1997). All effective learners draw from a repertoire of learning strategies in a flexible manner. Some of these strategies are used automatically, while some require controlled processing and metacognitive control that place high demands on limited cognitive resources. Good learners use a wide variety of strategies and use them in a highly automatic fashion. However, there are three general

strategies that all effective learners use in most situations. These include *organization, inferences*, and *elaboration* (Mayer & Moreno, 2003). Organization refers to how information is sorted and arranged in long-term memory. Information that is related to what one already knows is easier to encode and retrieve than isolated information. In some cases, individuals already possess well organized knowledge with empty slots that can be filled easily with new information. Activating existing knowledge prior to instruction, or providing a visual diagram of how information is organized, is one of the best ways to facilitate learning new information. Constructing inferences involves making connections between separate concepts. Elaboration refers to increasing the meaningfulness of information by connecting new information to ideas already known.

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